

Rocky Point Gravel Mine Large Mining Operation Permit



September 29, 2008

Prepared for:
Marriott Rock Products
5238 W 2150 N
Ogden, UT 84404

Prepared by:



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M/003/007A
Task 2086FORM MR-LMO
(Revised April 2005)

FOR DIVISION USE ONLY

File #: M / /

Date Received:

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Permit Fee \$

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STATE OF UTAH
DEPARTMENT OF NATURAL RESOURCES
DIVISION OF OIL, GAS AND MINING
1594 West North Temple Suite 1210
Box 145801
Salt Lake City, Utah 84114-5801
Telephone: (801) 538-5291 Fax: (801) 359-3940

NOTICE OF INTENTION TO COMMENCE LARGE MINING OPERATIONS

The informational requirements in this form are based on provisions of the Mined Land Reclamation Act, Title 40-8, Utah Code Annotated 1953, General Rules and Rules of Practice and Procedures.

This form applies only to mining operations which disturb or will disturb more than five acres at any given time.

"MINING OPERATIONS" means those activities conducted on the surface of the land for the exploration for, development of, or extraction of a mineral deposit, including, but not limited to, surface mining and the surface effects of underground and in situ mining, on-site transportation, concentrating, milling, evaporation, and other primary processing.

"Mining operation" does not include: the extraction of sand, gravel, and rock aggregate; the extraction of oil and gas as defined in Chapter 6, Title 40; the extraction of geothermal steam; smelting or refining operations; off-site operations and transportation; or reconnaissance activities which will not cause significant surface resource disturbance or involve the use of mechanized earth-moving equipment such as bulldozers or backhoes.

PLEASE NOTE: *This form is to be used as a guideline in assembling the information necessary to satisfy the Large Mining Operations Notice of Intention requirements. You will need extra space to provide a majority of the information requested. Please provide the information on additional sheets and include cross-referenced page numbers as necessary. The Permittee / Operator may submit this information on an alternate form; however, the same or*

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similar format must be used.

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Rule R647-4-104 - Operator(s), Surface and Mineral Owners

The Permittee / Operator must provide the name, address and telephone number of the individual or company who will be responsible for the proposed operation. If a company is to be listed as the Permittee / Operator, then the name of the corporate officers need to be provided.

1. **Mine Name:** Rocky Point Gravel Mine
2. **Name of Permittee/ Operator/ Applicant:** Marriott Rock Products, LLC
Contact (Authorized Officer): Randy Marriott
Company (X) Corporation () Partnership () Individual ()
A corporation must be registered with the State of Utah, Division of Corporations. Are
you currently registered to do business in the State of Utah? x Yes No

Business License # 6238623-0160

Registered Agent (as identified on your business license): Randy Marriott
Address: 5238 W 2150 N
Ogden, UT 84404

Phone: 801-731-7252 Fax: 801-731-1008

3. **Permanent Address:** 5238 W 2150 N Ogden, UT 84404

Phone: 801-731-7252 Fax: 801-731-1008

4. **Company Representative** (or designated operator):

Name: Randy Marriott
Title: Owner/ Operator
Address: 5238 W 2150 N Ogden, UT 84404
Phone: 801-731-7252 Fax: 801-731-1008

5. **Location of Operation:** County(ies) Weber/ Box Elder
Western 1/2 of Section: 13 Township: 7N Range: 2W
SE 1/4, Section: 14 Township: 7N Range: 2W
NW 1/4, Section: 24 Township: 7N Range: 2W

The names of the surface and mineral owners for any areas which are to be impacted by mining must be provided to the Division. This list should include all private, state and federal ownership and the owners of lands immediately adjacent to the project areas.

6. **Ownership of the land surface** (circle all that apply): Private (Fee), Public Domain (BLM), National Forest (USFS), State of Utah (SITLA) or other:

Name: Westside Inv, LC Address: 5238 W 2150 N Ogden, UT 84404

Deleted: n

Owner(s) of record of the minerals to be mined (circle all that apply): Private (Fee), Public Domain (BLM), National Forest (USFS), State of Utah (SITLA) or other:

Name: Westside Inv, LC Address: 5238 W 2150 N Ogden, UT 84404

Deleted: n

7. BLM Lease or Project File Number(s) and/or USFS Assigned Project Number(s): N/A

BLM Claim Numbers: N/A

Utah State Lease Number(s): N/A

Name of Lessee(s): N/A

8. Adjacent land owners:
Weber County:

PARCEL ID	NAME ONE	STREET 1	CITY STATE	ZIPCODE	Phone	Formatted: Font: (Default) Arial, 11 pt, Font color: Light Blue
190010018	BUTTERS, KENT E &	760 N HARRISVILLE	OGDEN UT	84404	801-782	
190150067	VIEYRA, SERGIO R	1902 W PLEASANT VIEW DR	OGDEN UT	84414		
190150038	HORTON, RON EDWIN & WF	1752 W PLEASANT VIEW DR	OGDEN UT	84404	801-721-4171	
190150040	CHAMBERLAIN, WILLIAM M &	HCR 63 BOX 1-B	HAMMETT ID	83827		
190150051	NEILSON, PAUL R & WF	1806 W PLEASANT VIEW DR	OGDEN UT	84414	801-786-8503	
190150060	CHILD, HEBER H & WF	1888 W PLEASANT VIEW DR	OGDEN UT	84414	801-782-2140	
190150039	HORTON, MICHAEL R & WF	1766 W PLEASANT VIEW DR	OGDEN UT	84414		
190020001	UTAH POWER AND LIGHT COMPANY	P O BOX 899	SALT LAKE CITY UT	84110	1-888-221-7070	
190010019	BONA VISTA WATER IMPROVEMENT	2020 W 1300 N	OGDEN UT	84404	801-621-0474	
190150044	STURGEON, WALTER W &	1888 W PLEASANT VIEW DR	OGDEN UT	84414	801-782-4195	
190150045	LICHFIELD, MARK W	1890 PLEASANT VIEW DR	OGDEN UT	84414		
190120002	MAUGHN, ERIC & WF	1396 W PLEASANT VIEW DR	OGDEN UT	84414	801-782-5880	
190150055	SKY LINER LLC	P O BOX 3085	OGDEN UT	844091085		
190010016	LARSEN, JERRY V &	1255 E 2925 N	OGDEN UT	84414	801-782-6248	
190020003	WESTSIDE INVESTMENTS LC	5238 W 2150 N	OGDEN UT	84404	801-731-7252	
190150055	SKY LINER LLC	P O BOX 3085	OGDEN UT	844091085		
190020002	UTAH POWER AND LIGHT COMPANY	P O BOX 899	SALT LAKE CITY UT	84110		
190150042	COUNTRY MUTUAL LIFE	1800 W PLEASANT VIEW	OGDEN UT	84414		
190020020	UTAH POWER & LIGHT CO.	P O BOX 899	SALT LAKE CITY UT	84110		
190150036	CRAIG & COMPANY CUSTOM HOMES	2521 E COBBLESTONE WAY	SANDY UT	84093		
190150046	UNDERWOOD, CONNIE	1862 W PLEASANT VIEW DR	OGDEN UT	84414	801-782-2539	
190150066	BURTON, JAMES & WF	3888 HWY 89	PLEASANT VIEW UT	84414		
190010003	ONE HUNDRED ELEVEN BAR (111)	3243 N 400 W	OGDEN UT	84404		
180320018	INVESTORS ASSOCIATES LLC	2363 S FOOTHILL DR	SALT LAKE CITY UT	84109		
190150001	ANDERSEN, RODNEY J	3942 N 1350 W	OGDEN UT	84414		
191400001	HANLINE, DAVID R	294 E 3100 N	OGDEN UT	84414		
190110135	LARSEN, LOIS R TRUST 1/2 ETAL	3860 N 1100 W	OGDEN UT	84414	801-782-6248	
190110088	PLEASANT VIEW CITY	885 W PLEASANT VIEW DR	OGDEN UT	84414	801-782-8176	
190150003	ANDERSON, RODNEY J	3902 N HWY 89	PLEASANT VIEW UT	84404		
190150001	ANDERSEN, RODNEY J	3942 N 1350 W	OGDEN UT	84414		
190150002	ANDERSEN, RODNEY J	3942 N 1350 W	OGDEN UT	84414		
190110137	LARSEN, LOIS R TRUSTEE	3860 N 1100 W	OGDEN UT	844141332	801-782-6248	

Box Elder County:

parcel number	Name	address1	City	State	zip code	Phone
01-047-0015	R & K PROPERTIES LC,	5238 W 2150 N	OGDEN	UT	84404-9700	
01-022-0002	UTAH POWER & LIGHT CO,	PO Box 899	SLC	UT	84110	
01-022-0011	ONE HUNDRED ELEVEN BAR (111) RANCH LTD,	3243 N 400 W	OGDEN	UT	84414-2115	801-782-9070
01-047-0016	JACK B PARSON COMPANIES,	PO BOX 3429	OGDEN	UT	84409-1429	
01-047-0018	BOWCUTT, GALE H	9138 S HIGHWAY 89	WILLARD	UT	84340-9109	
01-047-0040	FROERER, ZANE B	2600 WASHINGTON BLVD	OGDEN	UT	84401	
01-047-0016	JACK B PARSON COMPANIES,	PO BOX 3429	OGDEN	UT	84409-1429	
01-047-0037	BEACKSTEAD CONSTRUCTION LC,	4144 N 250 W	PLEASANT VIEW	UT	84414	
01-047-0039	STEVENS, TED A	3975 N HWY 89	PLEASANT VIEW	UT	84414	
01-047-0041	INSUL-TILE INC,	2600 WASHINGTON BLVD	OGDEN	UT	84401	
01-047-0038	UTAH POWER & LIGHT CO,	PO Box 899	SLC	UT	84110	1-888-221-7070
01-045-0085	MARRIOTT, RANDY	5238 W 2150 N	OGDEN	UT	84404	801-731-7252
01-047-0003	R & K PROPERTIES LC,	5238 W 2150 N	OGDEN	UT	84404-9700	
01-022-0011	ONE HUNDRED ELEVEN BAR (111) RANCH LTD,	3243 N 400 W	OGDEN	UT	84414-2115	801-782-9070
01-045-0084	MARRIOTT, RANDY ETAL	5238 W 2150 N	OGDEN	UT	84404	801-731-7252
01-045-0084	MARRIOTT, RANDY ETAL	5238 W 2150 N	OGDEN	UT	84404	801-731-7252

9. Have the land, mineral and adjacent land owners been notified in writing?
No

If no, why not? Most are already aware and state will send out notices when the permit is ready for approval. Parcel number 90587 (Bona Vista Water Company) is aware of the mining operations. The 2 acres that they own has not been disturbed by mining. Bona Vista Water Company has shown interest in moving the water tank closer to Highway 89 sometime in the far off future. The old tank would be removed completely.

10. Does the Permittee / Operator have legal right to enter and conduct mining operations on the land covered by this notice? ☒ Yes No

Rule R647-4-105 - Maps, Drawings & Photographs

105.1 - Base Map

A complete and correct topographic base map (or maps) with appropriate contour intervals must be submitted with this notice showing all of the items on the following checklist. The scale should be approximately 1 inch = 2,000 feet (preferably a USGS 7.5 minute series or equivalent topographic map where available). The map(s) must show the location of lands to be affected in sufficient detail to allow measurement of the proposed area of surface disturbance.

Base Map Checklist

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features. The base map is labeled 'Base Map' in the lower right hand corner of the map.

- (a) Property boundaries of surface ownership of all lands which are to be affected by the mining operations;

The black dashed boundary on the base map is the property currently owned by Marriott Rock Products and its subsidiaries. This area equals 453 acres. However, not all 453 acres will be affected by mining. The base map shows the areas to be affected by mining and these areas equal 145 acres. Thirty-three acres below the Ogden-Brigham Canal will be disturbed by mining in addition to two acres that will be used to stockpile fines for reclamation (Phase One). One hundred seven (107) acres will be affected by mining above the Ogden-Brigham Canal, as well as 3 acres needed for the stockpiling of reclamation fines. About 100 acres have been previously impacted by gravel mining, executed by previous land owners. Twenty-six of these 100 acres are below the canal (Phase One) and 76 of these acres are above the canal (Phase Two).

- (b) Perennial, intermittent, or ephemeral streams, springs and other bodies of water; roads, buildings, landing strips, electrical transmission lines, water wells, oil and gas pipelines, existing wells or boreholes, or other existing surface or subsurface facilities within 500 feet of the proposed mining operations;

An intermittent stream runs along the North side of the property.
No springs or other bodies of water are on the property. There is a pond 1020 feet West of the lower pit across Highway 89. Water right number 35-5550 (red dot just outside the southern boundary of the property) is a water well that is 3900 feet from the base of the bottom pit. Water lies 11 feet below the surface at that well (tested in 1992). Water right number 29-1766 (green dot 4900 feet to the north of the property) is also a water well that reaches water 78 feet below the surface. Water right number 29-1236 is a water well that is 4500 feet north of the property where water lies 8 feet below the ground surface.
The roads shown on the base map are Highway 89 that runs directly adjacent to the property and the major access roads that the operators use to reach the quarry.
The building on the property is the office at the base of the quarry that is the size of a double wide trailer.
There is no landing strip on the property.
A Rocky Mountain Power transmission line runs southwest to northeast on the property, and this power line will remain throughout and after mining operations.
There is a Questar gas line that runs adjacent to the Ogden- Brigham Canal that runs North to South through the property.
There are no existing wells or boreholes on the property.

- (c) Proposed route of access to the mining operations from nearest publicly maintained highway (Map scale appropriate to show access);

The proposed route of access is the red road with an 'X' through the red line on the base map.

- (d) Known areas which have been previously impacted by mining or

exploration activities within the proposed land affected;

There is approximately 100 acres of land that have been previously mined for gravel over the property for approximately 40 to 50 years. The property below the gas line was mined by the Orttons for many years until Marriott Rock Products bought the property several years ago. The property above the canal has been mined intermittently for gravel, pit run and landscape rocks for at least the last 50 years.

- (e) Areas proposed to be disturbed or reclaimed over the life of the project or other suitable time period.

The area to be disturbed and reclaimed over the life of the project is demarcated with red hatch. The area consists of a total of approximately 145.5 acres. However, the first phase of the mining shall only include the area below the gas line (33.5 acres), and the areas that will be used for the topsoil stockpiles (total of two acres).

105.2 – Surface Facilities Map

Surface Facilities Map Checklist

Surface facilities maps should be provided at a scale of not less than 1" = 500'.

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

NOTE: The proposed location of the proposed sediment retention pond will be finalized when the stormwater plan is finalized.

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- a) Proposed surface facilities, including but not limited to: buildings, stationary mining/processing equipment, roads, utilities, power lines, proposed drainage control structures, and the location of topsoil storage areas, overburden/waste dumps, tailings or processed waste facilities, disposal areas for overburden, solid and liquid wastes, and wastewater discharge treatment and containment facilities,

The surface facilities shown in black hatch on the surface facilities map at the West edge of the property include the office (double wide trailer), and the crushing equipment (a D-8 dozer, 5 track excavators, 3 front end loaders, 2 cone crushers, 2 jaw crushers, 2 deck screens and 9 material stackers and conveyers.). The very small black hatch above the Phase One area is an old (non-operational) scale house. The orange rectangle showing 'Questar Gas' is a valve house for the high pressure gas line that runs north to south through the property. The gray line and easement is a Rocky Mountain Power transmission line that runs from the southwest corner of the property toward the northeast. Stockpiled fines will be stored for Phase One east of the Questar gas line. Present sediment retention areas are shown as green ¼ circles along the road where they are located.

- b) A border clearly outlining the extent of the surface area proposed to be affected by mining operations and the number of acres proposed to be affected.

The border that shows the area of the surface area proposed to be affected by mining operations and its associated acres are shown on the Base Map. One hundred forty- five (145.5) acres are to be disturbed throughout the life of the mine. Thirty- three and one-half acres are included in the Phase One below the Ogden-Brigham Canal and also includes 2 acres of stockpiled fines for

reclamation above the canal. A total of 110 acres above the canal will be disturbed. Eighty seven acres will be left as a pit floor, 20 acres will be 20 foot wide benches at approximately 100 foot elevation intervals within the high walls, and 3 acres will be used for stockpiling fines for reclamation.

- c) The location of known test boring, pits, or core holes
No test boring pits or core holes

105.3 - Additional Maps

Included in this permit is a geology map with the property boundary superimposed upon it to help show the composition and depth of the geologic formations in the area.

A map to show the locations and boundaries of Phase One and Phase Two has been included to clarify the areas.

A watershed map has also been included to show how surface water flow will be directed to the sediment detention areas within the property and shows the general watershed area.

Reclamation Treatments Map Checklist

Please check off each section to verify these features are included on the map(s) or explain why it is not applicable. Please add the map identification name or number which shows these features.

Check
Map ID

- (a) Areas of the site to receive various reclamation treatments shaded, cross hatched or color coded to identify which reclamation treatments will be applied. Areas would include: buildings, stationary mining/processing equipment, roads, utilities, proposed drainage improvements or reconstruction, and sediment control structures, topsoil storage areas, waste dumps, tailings or processed waste facilities, disposal areas for overburden, solid and liquid wastes, ponds, and wastewater discharge, treatment and containment facilities. Reclamation treatments may include ripping, regrading, replacing soil, fertilizing, mulching, broadcast seeding, drill seeding, and hydroseeding:

In the Phase One area, there is no topsoil available for reclamation as 1) there was very little to no topsoil in its natural state and 2) the previous mining activity left no top soil. Therefore, three areas have been delineated for storage of adequate fines to complete revegetation. Where unconsolidated material exists, the surface will be ripped to 18 inches depth. These unconsolidated materials will then be amended with 10 tons/acre of composted manure, and then broadcast seeding at a rate of 15-20 PLS pounds per acre will occur ideally in the fall.

If only consolidated material remains, twelve inches of unconsolidated material will be spread on these areas and amended with 10 tons per acre of composted manure. Broadcast seeding at a rate of 15-20 PLS pounds per acre will then occur ideally in the fall.

Phase Two will likely continue to use the same areas for stockpiled fines delineated for Phase One, in addition to two more stockpile areas in the upper regions of the Phase Two mining area. These two additional stockpile areas will be developed as needed toward the end of the mining process in Phase Two.

The red hatch in the Phase One area on the reclamation map shows where 12" of growth material will be spread over the remaining material amended with 10lbs/acre of composted manure and hydroseeded at 20 PLS lbs/acre. This will include 32 acres on the lower pit and 1.5 acres of benches within the 1:1 walls in the area below the canal. Additionally, the area where the stockpiled fines will be located just east of the gas line will also be reclaimed.

For the Phase Two reclamation area, the volume of the stored fines will be spread evenly across the 110 acres of the Phase Two area. The stockpiled fines will be amended with 10lbs/acre of composted manure and hydroseeded with 20 PLS lbs/acre. This amounts to reclamation of 87 acres on the pit floor and 20 acres of benches within the 1:1 walls on the East side of the property. There are an additional 3 acres occupied by stockpiled fines in the upper area that will be reclaimed.

Appendix C shows where subsoil samples were taken to ensure it is a suitable growth media.

The reclamation treatments map also shows the existing and proposed sediment retention and runoff containment areas. The runoff containment areas were designed to withstand a 25 year 24 hour storm event.

Roads and other final grade areas will be reclaimed by first regrading to final grade where necessary. Appropriate erosion and sediment control structures and other drainage structures will be installed as per engineering standards for the proposed use. Typical cross sections of storm water containment areas and sediment basins are included in the Stormwater Management Plan – Appendix B

- (b) A border clearly outlining the extent of the area to be reclaimed after mining, the number of acres disturbed, and the number of acres proposed for reclamation:
- (c) Areas disturbed by this operation which are included in a request for a variance from the reclamation standards:
- (d) Highwalls which are proposed to remain steeper than 45 degrees and slopes which are proposed to remain steeper than 3 horizontal : 1 vertical.

Note: Areas included in sections c & d will need to be referenced in the variance request section. Please shade or color code these areas on this map.

Additional maps and cross sections may be required in accordance with Rule R647-4-105.3. Design drawings and typical cross-sections for each tailings pond, sediment pond, or other major drainage control structures must also be included.

Typical cross sections of storm water containment areas and sediment basins are included in the Stormwater Management Plan – Appendix B

Rule R647-4-106 - Operation Plan

106.1 - Mineral(s) to be mined: Rock and Gravel

106.2 - Type of Operation Conducted:

Excavate native rock, screen and/or crush as needed for various gravel products. Phase One will consist of excavation/mining of the area below the canal (33.5 acres). Limited surface mining above the canal will take place in Phase One, only to retrieve selected landscape rock that is easily accessible with an excavator. Phase Two will consist of the area above the canal. The processing, sorting and stockpiling of product occurs on the pit floor of the Phase One area. The Phase One pit floor is planned to be used for the same uses for gravel and sand products from the Phase Two area. All phases will be covered for this LMO, however, a surety bond will be posted on only Phase One at this time.

Deleted: Future phases

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Describe the typical methods and procedures to be used in mining operations, on-site processing and concurrent reclamation. Include equipment descriptions where appropriate.

The unconsolidated materials on the surface vary and are between 10 to 50 feet thick throughout the mining property. These unconsolidated materials are scraped of any remaining vegetation, then excavated with a track excavator and loaded into haul trucks. Blasting is utilized approximately once per week or as needed to loosen the consolidated materials for excavation. The unconsolidated material remaining to be mined within Phase One (mining to 4,280 ft above sea level) is about 100 feet thick. The consolidated material to be mined in future phases (above the canal) is approximately 300 feet thick (on average). The consolidated deposits range from 500 to 1,500 feet thick (See geology map in Section 106.8). Blasting will occur on an average about once per week. Blasting agents used are non electric caps with a 60% emulsion. Excavation and loading occurs with a D-8 dozer, 5 track excavators and 3 front end loaders blasting is needed again to loosen more rock. In Phase One, the rock and gravel has been excavated progressively toward the East. Crushing and loading occurs on site with 2 cone crushers, 2 jaw crushers, 2 deck screens and 9 material stackers and conveyers.

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Deleted: Excavation and loading occurs with a D-8 dozer, 5 track excavators and 3 front end loaders

Minimal amounts of surface rock for landscaping purposes may be sold from the Phase 2 area. No excavation will occur in Phase Two until Phase One is completely mined, an updated mine plan is submitted (as needed) and Phase Two is bonded.

106.3 - Estimated Acreage

Acreage listed here should match areas measured off the maps provided.

Areas of actual mining:

Phase 1	35.5	Deleted: 64
Future Phases	110	Deleted: 106
Overburden/waste dumps:	0	
Ore and product stockpiles:	0	Deleted: 0
Access/haul roads:		
Phase 1	2 (included in mining area)	Deleted: 7
Future Phases	11 (already present and will remain post mining for access to mines beyond the property)	Deleted: 6
Associated on-site processing facilities:	2 (included in mining area)	
Tailings disposal:	0	
Other - Please describe:		
Total Acreage	145.5	

106.4 - Nature of material including waste rock/overburden and estimated tonnage

Describe the typical annual amount of the ore and waste rock/overburden to be generated, in cubic yards. Where does the waste material originate? What is the nature of the overburden/wastes (general chemistry/mineralogy and description of geologic origin)? Will it be in the form of fines or coarse material? What are the typical particle size and size fractions of the waste rock?

It is estimated that about 705,000 cy or 1,092,750 tons will be generated from Phase One each year. At this time, it is unclear the amount of material will be generated each year in Phase Two of the mine, as it depends upon market demand. The estimated amount of gravel, rock and sand present (and to be mined) in Phase Two is approximately 34,000,000 cubic yards.. This estimate was estimated by using the topographic survey completed by JUB Engineering (March 2006) and the final post-mining topographic drawing and calculating the area between the two (using ArcView software).

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The operator estimates between 8 and 15 years will be needed to excavate the estimated 6,000,000 remaining cubic yards of material in Phase One. (Note: This is an estimate based off engineering estimates from 2007 less gravel and rock sold up to May of 2008) Surveying stakes will be posted in the lower pit (Phase One) to assure appropriate post mining slopes and benches are constructed correctly.

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Since the depth of the desired rock and gravel varies, the number of surface acres disturbed each year will also vary. No concurrent reclamation will occur in Phase One as the area is scheduled to function as the rock and gravel processing area for the material mined from Phase Two.

Very little to no waste material is generated as all rock and gravel material can be sold. Enough excess unconsolidated fines from the mine will be put aside, crushed to appropriate particle size and amended with composted manure to be used as plant growth medium for reclamation. There are two areas labeled as stockpiled fines above the Questar gas line that will be used for

Deleted: It is estimated that 704,225 cy of material will be generated each year from the Phase One area. At this time, it is unclear the amount of material will be generated each year in future phases of the mine, as it depends upon market demand.

reclamation of the Phase One area. There are two additional areas delineated within the Phase Two areas that will be used for stockpiling fines for reclamation.

Thickness of overburden: Very little to no overburden present where mining will occur

Thickness of mineral deposit: 100 to 400 ft

Estimated annual volume of overburden: 0

Estimated annual volume of tailings/reject materials: 0

Estimated annual volume of ore mined: Approximately 704,225 cy

Overburden/waste description: All sand, gravel, cobbles and rock will be mined, screened and used for road construction needs, landscaping rock or other needs. Fines will be stockpiled for use in revegetation as pit closure nears.

106.5 - Existing soil types, location of plant growth material

See Attached Baseline Soil and Vegetation Assessment Report. Appendix A.

106.6 - Plan for protecting and redepositing existing soils

Thickness of soil material to be salvaged and stockpiled:

0 inches

Area from which soil material can be salvaged: (show on map)

0 acres

Volume of (sub)soil to be stockpiled (Phase One):

54,047, cu. yds.

Deleted: 0

(cross reference with item 106.5 (a))

Describe how topsoil or subsoil material will be removed, stockpiled and protected.

As pit reclamation nears, excess unconsolidated fines will be brought to the three designated areas for storage and subsequent dispersal on the pit floor and benches. These stockpiles will likely be created and added to as reclamation nears to assure sufficient fines are available for reclamation, thus protection for the stockpile will not be necessary.

106.7 - Existing vegetative communities to establish revegetation success

See separate baseline soil and vegetation report (Appendix A)

106.8 - Depth to groundwater, overburden material & geologic setting

Describe the approximate depth to groundwater in the vicinity of the operation based on the completion of any monitoring or water wells in the area. Please show the location of these wells on the base map.

Depth to groundwater

Ground water wells in the area at the lowest elevation of the project area vary between 8 to 78 feet deep to reach potable water in the lower areas of the mine (See base map figure and

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accompanying explanation). The lowest elevation of the project will be at 4,280 feet above MSL next to Highway 89 and will be at 4,640 feet above MSL for Phase 2 activities.

Provide a narrative description of the geology of the area and/or a geologic cross section.

The geology of the Plain City Quadrangle has recently been mapped by Harty and Lowe (2005). One of the main geologic features of the area is the Pleasant View Salient. A salient is defined as a landform that extends out beyond its surroundings. The Pleasant view salient is topographically higher than most of the surrounding area. This protrusion (or salient) is held up by the erosionally resistant rocks of the underlying Cambrian Maxfield Formation and Cambrian Tintic Quartzite which in turn overlay the Farmington Canyon Complex (FCC). The Maxfield Formation and the Tintic Quartzite are between 500 to 1500 feet thick. The erosional resistance of these particular formations are clearly demonstrated as Stansbury Island and Antelope Island are also made of these formations.

These rocks were formed roughly 500 million years ago and older. They have been through many geologic events. They have been thoroughly indurated, their grains recrystallized, and partially melted, as in the case of the FCC. The Farmington Canyon Complex is about 4 miles thick.

Roughly 100 million years ago the Sevier Orogeny, these rocks were displaced to the east on a type of fault called a thrust fault. Much more recently in geologic terms (within the last 15 million years or so), this area has been subject to Basin and Range Style block faulting. This type of faulting has created long linear valleys on the down dropped areas, which are bounded by blocks that have not been down dropped. This creates long linear mountain ranges on either side of the valley.

In the area of the gravel pit, the Sevier Orogeny block composed of the ancient rocks that are the Maxfield, Tintic and FCC formations have been cross cut by this more recent Basin and Range faulting by splay faults of the great Wasatch Fault. The splays in this area have only partially down dropped this block.

Due to the combination of the area's topographic position (lower than the mountains to the east) and the historic extent of Lake Bonneville, the area has undergone a deposition of a thin mantle of sediment. This sediment is a Quaternary Age (1.8 million years old to the present). The environments by which this Quaternary sediment was deposited are quite complex and may include landslide (mass wasting) deposits, alluvial (water borne and sorted) deposits, and alluvial deposits of very recent times. Additionally, lacustrine deposits occurred when the Great Salt Lake was high enough to cover this area with lake waters. These Quaternary deposits average about 20 feet thick.

The geology map shows the surficial geology and a cross section of the area.

Lower Proterozoic Metamorphic and Igneous Rocks

Xfu – Farmington Canyon Complex – undivided – Light to pink-gray, moderately to strongly foliated, hornblend bearing, granitic gneiss; dark gray to black. Total structural thickness probably exceeds 4 miles.

Paleozoic Sedimentary Rocks Cambrian Era

C-m Maxfield Formation, undivided- Small, resistant outcrops of light to dark-gray, medium- to thick-bedded, dolomite and minor limestone; mapped only where not covered by Lake Bonneville deposits on the Pleasant

View salient. Includes Ophir Shale where shown in cross sections; up to 150 m (500 ft) thick.

C-t Tintic Quartzite- Main part of formation consists of cliff-forming, white to tan, thin- to thick-bedded, quartz-rich, well-cemented sandstone (orthoquartzite) with some lenses of quartz-pebble conglomerate and thin

layers of argillite; argillite intervals increase in abundance and quartz pebbles decrease in abundance toward the top of the formation; basal part of the formation consists of heterogeneous mixture of green to purple to tan

arkosic sandstone, quartz-pebble conglomerate, and micaceous siltstone; about 400 to 450 meters (1300-1500 ft) thick; mapped only where not covered by Lake Bonneville deposits on the Pleasant View salient.

Quaternary Deposits

Qu- Quaternary deposits - Undivided as to age or genesis, on cross section only.

Qlg3 - Lacustrine gravel bearing deposits, Lake Bonneville, moderately to well sorted, pebble to cobble gravel and gravelly sand interlayered with some silt and sand; deposited and reworked in higher energy environments along the Provo and regressive shorelines near the mountain front and on the Pleasant View salient.

Qaf1 - Younger alluvial fan deposits; Holocene - Mixture of gravel and sand deposited by streams deposited by debris flows

106.9 - Location and size of ore and waste stockpiles, tailings and treatment ponds, and discharges

Describe the location and size of any proposed waste/overburden dumps, stockpiles, tailings facilities and water storage or treatment ponds.

There are no proposed waste/ overburden dumps, as all material mined is sold. There is an existing sediment retention pond on the property that is approximately 0.16 acres in size and located in the central area of the property close to the main road (See surface facilities map).

Two proposed sediment retention ponds are to be built and will be correctly sized according to a 24 hour 25-year storm event (See Stormwater Plan - Appendix B). A retention area will be located close to the pit wall in the Phase One area. The pit floor will be slightly sloped toward the base of the 1:1 slope to assure stormwater will not leave the site. A second retention pond shall be about 4 acres in size and will be located just north and east of the current retention pond.

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Describe how overburden material will be removed and stockpiled.

No overburden in this process

Describe how tailings, waste rock, rejected materials, etc. will be disposed of.

No waste rock, tailings, or rejected materials

Describe the acreage and capacity of waste dumps, tailings ponds and water storage ponds to be constructed. All impoundments must include the necessary hydrologic calculations to determine if they are adequately sized to handle storm events.

As excavation of Phase One continues, the area will be graded at a minimum of 0.5% toward the base of the actively mined slope. The containment areas created by the grading plan will provide over 40 acre-feet of storage at the completion of mining operations, which far exceeds the storage requirement for the Phase One areas. Because slopes are gradual and the planned grading forms a low point without embankments, no emergency overflow or additional engineering controls are needed.

The Phase Two area will be graded to drain to a containment pond that will be excavated just above the canal. The detention basin will be expanded as additional areas becomes tributary. Berms and ditches will be used to direct runoff to the containment pond. Approximate dimensions of rectangular containment/ infiltration excavation with a volume of 17 acre-feet is 280 feet wide by 620 feet long by 5 feet deep (Numerous layout dimensions are possible). A minimum of 1 foot of free board should also be provided (See Reclamation Map) Details of the Phase 2 containment/ infiltration area is shown in Figure 2-3 in the Stormwater Management Plan included in Appendix B.

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Describe any proposed effluent discharge points (UPDES) and show their location on the surface facilities map. Give the proposed discharge rate and expected water quality. Attach chemical analyses of such discharge if available.

No effluent discharge points

Rule R647-4-107 - Operation Practices

During operations, the Permittee / Operator shall conform to the practices listed under this section of the Minerals Rules unless the Division grants a variance in writing.

Describe measures taken to minimize hazards to public safety during mining operations regarding:

the closing or guarding of shafts and tunnels to prevent unauthorized or accidental entry in accordance with MSHA regulations; no shafts or tunnels

the disposal of trash, scrap metal, wood and extraneous debris;

There are 3 dumpsters on the property for trash, scrap metal and extraneous debris for

disposal as needed

the plugging or capping of drill, core or other exploratory holes;
There are no drill, core or exploratory holes

the posting of appropriate warning signs in locations of public access to operations;

There is no public access to the property.

the construction of berms, fences or barriers above highwalls or other excavations. If any of these safety measures are unnecessary, please explain why.

Public access is extremely limited as all property is private in the area. Moreover, the canal is situated above the phase one area and serves as a barrier to travel toward the upper end of the 45 degree (1:1) slope.

Describe measures taken to avoid or minimize environmental damages to natural drainage channels which will be affected by this mining operation.

Mining will not take place in the drainage on the north side of the property. This is the only natural drainage channel on the property.

Describe measures taken to control and minimize sediment and erosion on areas affected by this mining operation. Describe measures being taken to prevent sediment from leaving the disturbed area.

Proper Best Management Practices (BMPs) are in place (such as sediment retention ponds and temporary slope drains) and are maintained on a regular basis. As mining operations shift with time, roads are either obliterated and mined and/or re-routed. As this occurs, new appropriately sized slope drains/sediment retention area will be created. The following photographs show a couple of the present sediment and



water retention areas



Identify any potentially deleterious materials that may be stored on site (including fuel, oil, processing chemicals, etc.) and describe how they will be handled and stored.

One 2,000 gallon above ground tank of diesel fuel is on the property for heavy equipment use. It is located above the current pit floor away from consistent truck traffic.

Describe the measures taken to salvage and store soils to be used in reclamation.

There is no soil to be salvaged or stored during this operation. Enough consolidated and unconsolidated material will be purposefully left near the end of mining operations to assure an 12 inch deep cover of the pit floor. This unconsolidated material will then be amended with 10 tons/acre of composted manure for reclamation purposes.

Describe how stockpiled topsoil will be protected from erosion and further impact.

No topsoil is available for stockpiling. Fines will be stockpiled as final reclamation nears, so will likely not be present for any great length of time and will not need protection.

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Please describe any reclamation to be done during active mining operations prior to final closure. Reference these areas on a map.

As possible, benches in the Phase One area will be reclaimed while mining operations continue. However, the pit floor will be needed for product stockpiles and processing so no reclamation will be completed on the pit floor during Phase One.

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Rule R647-108 - Hole Plugging Requirements

All drill holes which will not eventually be consumed by mining must be plugged according to the methods listed in this section. Describe the location of any aquifers encountered by drilling and the method to be used to plug such water containing holes. Describe the method to be used for plugging holes not containing water.

No drill holes

Rule R647-109 - Impact Statement

109.1 - Surface and groundwater systems

Describe impacts to surface or groundwater which could be caused by this mining operation. Describe how these impacts will be monitored and mitigated. The appropriate groundwater and stormwater control permits need to be obtained from the Division of Water Quality. Please reference any such permits.

No impacts to groundwater will be incurred by this operation. There are no perennially flowing streams on the property. Surface/ storm water has been and will be captured in sediment collection ponds and temporary slope drains as outlined in the Stormwater

Management Plan in Appendix B.

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109.2 - Wildlife habitat and endangered species

Describe the impacts on wildlife habitat associated with this operation. Describe any impacts to big game species found in the area. Describe any impacts to riparian areas. Describe any impacts this operation will have on waterfowl (fly-over, temporary resident or permanent resident). List any threatened or endangered wildlife species found in the area. Describe impacts to threatened or endangered species and their habitats. Describe measures to be taken to minimize or mitigate any impacts to wildlife or endangered species.

The Division of Wildlife Resources has designated a large area of the Wasatch Front in this area as 'crucial winter range' for mule deer. The western edge of this area includes the northern portion of the mine. However, it is unlikely that deer are utilizing the area currently as there is so much continuous activity. No impacts to riparian species will likely be realized because mining operations will not occur in the ephemeral drainage will not be disturbed in the mining process.

Waterfowl generally use the Great Salt Lake directly to the west of the mine for their habitat and migration needs. Because of the close proximity of the Great Salt Lake and lack of water on site, waterfowl will most likely not be affected by the activities at the mine.

Several visits to the mine area by a biologist of WP Natural Resource Consulting has yielded no evidence of the presence of threatened or endangered (T&E) species, nor any evidence of suitable habitat for T&E species. No presence of threatened or endangered species have been recorded in the mining area by the Utah Division of Wildlife Resources (UDWR).

109.3 - Existing soil and plant resources

Describe impacts to the existing soil and plant resources in the area to be affected by mining operations. Describe impacts to riparian or wetland areas which will be affected by mining. Describe impacts to threatened or endangered plant species. Describe measures to be taken to minimize or mitigate any impacts to soil and plant resources.

Existing conditions for soil and plant resources can be found in the attached 'Baseline Assessment' for the mine area. No riparian or wetland areas will be impacted by mining. One ephemeral drainage is located on site and that drainage will not be mined. There are no threatened or endangered plant species nor is there any habitat for any threatened or endangered plant species on the site.

109.4 - Slope stability, erosion control, air quality, public health & safety

Describe the impacts this mining operation will have on slope stability, erosion, air quality, public health and safety. Include descriptions of highwall and slope configurations and their stability. Air quality permits from the Utah Division of Air Quality may be required for mining operations. Please reference any such permits. Describe measures to be taken to minimize or mitigate impacts to slope stability, erosion, air quality, or public health and safety.

Post mining slopes will be kept to a 1:1 (or 45 degree) steepness with 20 foot wide benches within the slopes every 100 vertical feet or less in the Phase Two area and 15 foot wide benches in the Phase One area. As these slopes will be undisturbed consolidated material, the slopes will remain stable. The benches will be reclaimed to DOGM standards. These benches will also capture potential eroded material coming from the 1:1 slopes.

Additionally, the mine plan includes a 200 foot setback from the Eastern edge of the property to have a sufficient safety buffer around the boundary of the highwalls in that area of the mine.

In the previously mined areas (Phase Two), the operator has constructed a number of berms at the base of slopes to capture loosened and falling rock. To assure post mining slopes are achieved, a surveyor will place reference points within the mining area to assure operators do not exceed slope steepness and confirm the area needed for the desired post mining configuration.

The mine currently operates under two existing air quality permits. One is for the Rocky Point Aggregate Plant (permit # (DAQE 105-02), and the other is the Gary Orton Property (recently bought by Marriott). This permit number is DAQE 110-01. These two permits have been combined and updated by adding equipment in use at the plant. Appendix D includes a copy of the air quality permit. The mine and the mining process produces exhaust/ dust each day. Control measures include water spray on the screens, crushers and conveyers as necessary and watering and/or application of magnesium chloride on the mine roads to reduce air borne dust particles.

At present, several temporary sediment collection ponds and temporary slope drains are in place to capture sediment and stormwater (See facilities map and Operation Practices for photos). A Stormwater Pollution Prevention Plan is attached as Appendix B to address erosion and sediment control going forward. The operations areas, processing areas, haul road, storage areas, and all other disturbed areas will be graded to direct storm water toward containment and infiltration areas. These basins will have sufficient capacity to contain the runoff from a 25-year 24 hour storm event without consideration of infiltration rates.

Haul roads at the mine are between 8 and 9%, and are bladed and re-graded on a regular basis to assure no blocking or restrictions impede drainage or adversely affect the haul road effectiveness.

Public health and safety are consistently being addressed at the mine. First, traffic from Highway 89 can no longer turn directly into the mine coming from the north. High volumes of truck traffic coming into and leaving the pit made this turn dangerous to all traffic on Highway 89. As a result, concrete barriers have been placed across the highway to assure no traffic comes into the mine from the north.

More private property/ no trespassing signs will be erected at the entrances to the mine area to assure no entry into the mining area by the public occurs.

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Rule R647-4-110 - RECLAMATION PLAN

Current land use and postmining land use

Current or premining land use(s) [other than mining]:

In some areas of the mine, the pre-mining land use was agriculture. There are remains of an orchard on the southern region of the property. In the majority of the property, the area has been mined for rock and gravel for many years.

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List future post-mine land-use(s) proposed:

The proposed post-mining land-use is a residential sub-division as well as some mixed use development (residential and commercial). As mine closure nears (within approximately 5 years), city/county zoning will be verified and any issuance of building permits and other necessary documentation from local governments for development will be submitted to the Division of Oil, Gas and Mining. Since this development is many years in the future, the Division of Oil Gas and Mining requires that the reclamation bond posted at this time be for open space and wildlife habitat.

(Develop the reclamation plan to meet proposed post-mine land use.)

110.2 - Reclamation of roads, highwalls, slopes, leach pads, dumps, etc.

Describe how the following features will be reclaimed: roads, highwalls, slopes, impoundments, drainages and natural drainage patterns, pits, ponds, dumps, shafts, adits, drill holes and leach pads. Describe the configuration of these features after final reclamation. Describe the rinsing and neutralization of leach pads associated with final decommissioning.

Describe how roads will be reclaimed. Road reclamation may include: regrading cut and fill sections, ripping the road surface with a dozer, topsoil replacement, construction of water bars, construction of traffic control berms or ditches, and reseeding.

Roads and other final grade areas that will not be developed for post mining use will be reclaimed by first regrading to final grade where necessary. Appropriate erosion and sediment control structures, culverts and other drainage structures will be installed as per engineering standards for suburban development. Where unconsolidated material exists, the surface will be ripped to 18 inches depth. These unconsolidated materials will then be amended with 10 tons/acre of composted manure, and broadcast seeding at a rate of 15-20 PLS pounds per acre will occur ideally in the fall.

If only consolidated material remains, twelve inches of unconsolidated material will be spread on these roads and amended with 10 tons per acre of composted manure. Broadcast seeding at a rate of 15-20 PLS pounds per acre will then occur ideally in the fall.

Describe how highwalls will be reclaimed. Highwall reclamation may include: drilling and blasting,

backfilling, regrading, topsoil replacement, and reseeded.

Within the 1:1 post mining slopes, benches approximately 15-20 feet wide every 100 vertical feet will be created to capture potential erosive material (See Original Grade and Finished Grade maps and figures). Twelve inches of unconsolidated material will be spread on these benches and amended with 10 tons per acre of composted manure. Broadcast seeding at a rate of 15-20 PLS pounds per acre will then occur ideally in the fall. Highwalls (1:1 slopes) will be planted as possible and as desired to achieve a manicured appearance for the proposed subdivision and development. Otherwise, 1:1 slopes will be left for vegetation to recolonize on its own.

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Describe how slopes will be reclaimed. Slope reclamation may include: regrading to a 3 horizontal : 1 vertical (3h:1v) configuration, topsoil replacement, contour ripping, pitting, and reseeded.

The post mining land use plan involves creating gently sloping (gentler than 3:1) areas at the base of the mine and directly above the canal. 1:1 slopes will be left between the pit floor and the canal (with 15 ft wide benches in the middle of the 1:1 slope). Another 1:1 slope shall be left between a 200 foot setback from the eastern most edge of the property and the eastern side of the pit floor of the Phase Two area. (see Original and Finished Grade maps), with 20 foot wide benches with in the 1:1 slope at the east end of the property.

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The gently sloping areas will likely be selectively landscaped as proposed roads, houses and other buildings are positioned for the development. Where landscaping will occur, eighteen inches of unconsolidated material will be spread on these benches and amended with 10 tons per acre of composted manure. Broadcast seeding at a rate of 15-20 PLS pounds per acre will then occur ideally in the fall.

Describe how impoundments, pits and ponds will be reclaimed. Include the final elevations and final disposition of the drainage in and around the impoundment. If the impoundment, pit, or pond is intended to be left as part of the post-mining land use, then an agreement with the land managing agency/owner is required. Structures to remain must be left in a stable condition.

The sediment retention area in the lower pit will remain at a 0.5% slope toward the back of the pit after mining operations have ceased to retain any excess storm water (See Storm Water Pollution Prevention Plan- Appendix B) Additionally, the area will be seeded at 15-20 PLS pounds per acre to enhance infiltration. The containment area created by this grading plan will provide over 40 acre-feet of storage, which far exceeds the 6.2 acre-feet needed to contain stormwater from a 25-year 24 hour storm event.

The retention pond in the upper area will be constructed and enlarged as mining progresses and the disturbed area increases to capture potential runoff. Calculations for the proper size retention pond for the upper area (Phase 2) are present in the Storm Water Pollution Prevention Plan (Appendix B) for an event of the same magnitude. The retention basin to capture runoff from the disturbed acres or Phase 2 will need to provide 17.2 acre-feet of

storage. Emergency overflow will be directed into the Brigham-Ogden ditch that runs through the property. See Appendix B and Drawing 2-3 for construction/ design details.

Include the final size of the impoundment, pit, pond in acre-feet of storage and the capacity of the spillway to safely pass storm events.

Impoundments, pits, and ponds, which are not approved as part of the post mining land use shall be reclaimed, free draining, and the natural drainage patterns restored.

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Describe how drainages will be reclaimed. Drainage reclamation would include: the reestablishment of a natural drainage pattern which fits in with the upstream and downstream cross-section of existing drainage in the vicinity of the disturbance; the reestablishment of a stable channel in the reclaimed reach of channel, using the necessary armoring to prevent excessive erosion and downstream sedimentation.

No natural drainages will be affected.

Include cross-sections and profiles of reestablished channels to demonstrate compatibility with existing drainage characteristics.

Describe how waste dumps will be reclaimed. Waste dump reclamation may include regrading to a 3h:1v configuration, topsoil replacement, mulch or biosolids applications, contour ripping or pitting, and reseeded. Characterization of the physical and chemical nature of the waste dump materials should be provided.

No waste dumps

Describe how shafts and adits will be reclaimed. Reclamation of shafts may include: backfilling, installation of a metal grate, installation of a reinforced concrete cap, topsoil replacement and reseeded. Reclamation of adits may include: backfilling, installation of a block wall, installation of a metal grate, topsoil replacement and reseeded.

No shafts or adits

Describe how drill holes will be reclaimed. Drill hole reclamation must be consistent with the rules for plugging drill holes (R647-4-108). Reclamation of plugged drill holes may include topsoil replacement and reseeded.

No drill holes

Describe how tailings areas will be reclaimed. Tailings reclamation may include: dewatering, neutralization, placement of cap materials, placement of subsoil materials, topsoil replacement and reseeded. Characterization of the physical and chemical makeup of the tailings material should be provided.

No tailings

Describe how leach pads will be reclaimed. Reclamation of leached materials may include: neutralization or leached materials, rinsing of leached materials, dewatering leached materials, regrading slopes of leached materials to 3h:1v, extending pad liners, placement of capping materials, placement of subsoil materials, mulch or biosolids application, topsoil replacement and reseeded. Characterization of the physical and chemical makeup of the leached materials should be provided. Post closure monitoring and collection of drain down fluids should also be

addressed.

No leach pads

NOTE: The Minerals Rules require overall highwall angles of no more than 45° at final reclamation unless a variance is granted. All dump or fill slopes should be left at an angle of 3h:1v or less. Any slopes steeper than 3h:1v must be reclaimed using state-of-the-art surface stabilization technology. Pit benches exceeding 35 feet in width should be topsoiled, or covered with fines, and revegetated.

Describe the final disposition of any stockpiled materials on site at the time of final reclamation.

110.3 - Surface facilities to be left

Describe any surface facilities which are proposed to remain on-site after reclamation (buildings, utilities, roads, drainage structures, impoundments, etc.). Describe their post-mine application. Justification for not reclaiming these facilities must be included in the variance request section.

No surface facilities proposed to be left.

110.4 - Treatment, location and disposition of deleterious materials

Describe the nature and extent of any deleterious or acid forming materials located on-site. Describe how these materials will be neutralized, removed, or disposed of on site. Describe how buildings, foundations, trash and other waste materials will be disposed of.

No deleterious or acid forming materials are located on site.

110.5 - Revegetation planting program and topsoil redistribution

Describe the revegetation tasks to be performed in detail. For example, will ripping, mulching, fertilizing, seeding and scarifying of these areas be performed and if so, how will this be accomplished? Correlate this information with the Reclamation Treatments Map.

a) Soil Material Replacement

In order to reestablish the required ground cover, one to two feet (depending on underlying material) of suitable soil material usually has to be redistributed on the areas to be reseeded. If the stockpiled soil isn't sufficient for this, soil borrow areas will need to be located.

Amended stockpiled fines will be used for revegetation. During mining operations, stockpiled fines will be stored above the Phase One area. The reclamation treatments map shows the locations of the stockpiled fines. The fines will be spread over the post mining areas, and will be amended with 10 tons per acre of composted manure to create an effective seed bed.

Describe the volume of soils and approximate depth of soil cover to be used in reclamation. Describe the source of these soils and provide an agronomic analysis of the soils. If soils will not be used describe the alternative material or amendments to be applied in lieu of soils. Describe the methods used to transport and place soils.

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The soils that will be used for reclamation will be a combination of unconsolidated materials (stockpiled fines) from the mine and composted manure. Twelve inches of unconsolidated material will be spread on the pit floors (Phases One and Two). Phase One area will need a total of 54,047 cy of unconsolidated material and 507 cy of composted manure for this purpose (34 acres). The unconsolidated materials will be brought down from the mining area with a 980 loader and spread with a D8 dozer. The composted manure will be dumped in a grid pattern by trailers (50cy capacity) and spread out with a D8 dozer. The surface will be left as rough as possible to encourage water harvesting and decrease possible erosion. As possible, plant growth material will be spread perpendicular to the hill slope with the heavy equipment to encourage water harvesting and discourage excessive erosion.

b) Seed Bed Preparation

Describe how the seedbed will be prepared and equipment to be used.

The Division recommends ripping or discing to a minimum of 12 inches and leaving the seed bed surface in as roughened condition as possible to enhance water harvesting, erosion control and revegetation success. Compacted surfaces such as roads and pads should be deep ripped a minimum of 18 inches.

Where possible, the seed bed will be ripped between 12 and 18 inches (depending on the amount of compaction) using an attachment on a D8 dozer. Where consolidated materials exist, 18 inches of unconsolidated material will be spread on top of the bedrock, and composted manure will be added at 10 tons/ acre. The surface will be left as rough as possible to encourage water harvesting and decrease possible erosion. As possible, plant growth material will be spread perpendicular to the hill slope to encourage water harvesting and discourage excessive erosion.

c) Seed Mixture - List the species to be seeded:

Provide a seed mix listing adaptable plant species and the rate of seeding that will be used at the site for reclamation. More than one seed mix may be needed, depending upon the areas to be reclaimed. Keep the proposed post-mining land use in mind when developing seed mixes.

See the attached report Baseline Vegetation and Soil Assessment for the Rocky Point Mine for this information. Appendix A

d) Seeding Method Describe method of planting the seed.

A broadcast seeder will be towed behind a bulldozer with rippers that is making the final pass over the area to be seeded. This will make final soil preparations and broadcast seed in one pass. This will help ensure proper seed to soil contact and leave the surface rough to create protected microsites and harvest additional water for enhanced seed germination and establishment success.

The Division recommends planting the seed with a rangeland or farm drill. If broadcast seeding,

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harrow or rake the seed 1/4 to 2 inch into the soil. Fall is the preferred time to seed.

e) Fertilization Describe fertilization method, type(s) and application rate

(if needed). Composted manure at 10 tons/ acre

f) Other Revegetation Procedures

Please describe other reclamation procedures, such as mulching, biosolids application, irrigation, hydroseeding, etc., that may be planned.

Permanent seeding will occur in the fall. Depending upon the progression of mining in Phase 2, if there are areas within this area that have been mined completely and repeated disturbance is not likely, these areas will be reclaimed concurrent to mining operations in other areas of Phase Two.

Rule R647-4-112 VARIANCE

The Permittee / Operator may request a variance from Rules R647-4-107 (Operation Practices), R647-4-108 (Hole Plugging), and R647-4-111 (Reclamation Practices) by submitting the following information:

- 1.11 the rule(s) which a variance is requested from; (rule number and content)
- 1.12 a description of the specific variance requested and a description of the area affected by the variance request; show this area on the Reclamation Treatments Map(s).
- 1.13 justification for the variance;
- 1.14 alternate methods or measures to be utilized in the variance area.

Variance requests are considered on a site-specific basis. For each variance requested, attach a narrative which addresses the four items listed above.

A variance was requested in the small mine permit to use amended fines for reclamation as topsoil is exceedingly thin or non-existent. This permit carries forward with that granted variance.

Rule R647-4-113 - SURETY

A Reclamation surety must be provided to the Division prior to final approval of this application. In calculating this amount, include the following major tasks:

- 1) Clean-up and removal of structures.

- 2) Backfilling, grading and contouring.
- 3) Soil material redistribution and stabilization.
- 4) Revegetation (preparation, seeding, mulching).
- 5) Safety gates, berms, barriers, signs, etc.
- 6) Demolition, removal or burial of facilities/structures, regrading/ripping of facilities areas.
- 7) Regrading, ripping of waste dump tops and slopes.
- 8) Regrading/ripping stockpiles, pads and other compacted areas.
- 9) Ripping pit floors and access roads.
- 10) Drainage reconstruction. Mulching, fertilizing and seeding the affected areas.
- 11) General site clean up and removal of trash and debris.
- 12) Removal/disposal of hazardous materials.
- 13) Equipment mobilization.
- 14) Supervision during reclamation.

To assist the Division in determining a reasonable surety amount, please attach a reclamation cost estimate which addresses each of the above steps. The areas and treatments included in the reclamation treatments map should correspond with items included in the reclamation cost estimate. The reclamation costs used by the Division must be third party costs.

See Appendix E

Deleted: B

X. PERMIT FEE [Mined Land Reclamation Act 40-8-7(I)]

The Utah Mined Land Reclamation Act of 1975 [40-8-7 (I)] provides the authority for the assessment of permitting fees. Commencing with the 1998 fiscal year (July 1 - June 30), and revised July 1, 2002, annual permit fees are assessed to new and existing notices of intention and annually thereafter until the project disturbances are successfully reclaimed by the Permittee / Operator and released by the Division.

Large mining permits require an initial submission fee and annual fee of \$500.00 for surface disturbance of 50 or less acres, or a \$1,000.00 fee for surface disturbance greater than 50 acres (see page six Section II, Rule R647-4-106.3 for estimated disturbance calculation). The appropriate fee MUST accompany this application or it cannot be processed by the Division.

PLEASE NOTE: If you are expanding from a small mining operation to a large mining operation, the appropriate large mine permit fee, less the annual \$150.00 small mine fee (if already paid) MUST accompany this application.

XI. SIGNATURE REQUIREMENT

I hereby certify that the foregoing is true and correct. (Note: This form must be signed by the owner or officer of the company/corporation who is authorized to bind the company/corporation).

Signature of Permittee / Operator/Applicant:

Name (typed or print):

Title/Position (if applicable):

Date: _____

PLEASE NOTE:

Section 40-8-13(2) of the Mined Land Reclamation Act provides for maintenance of confidentiality concerning certain portions of this report. Please check to see that any information desired to be held confidential is so labeled and included on separate sheets or maps. Only information relating to the location, size or nature of the deposit may be protected as confidential.

Confidential Information Enclosed: () Yes (X) No

**Appendix A- Baseline Vegetation and Soil
Assessment at Rocky Point Gravel Mine**

Baseline Vegetation and Soil Assessment at Rocky Point Gravel Mine



July 17, 2007

Prepared for:
Marriott Rock Products
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Prepared by:



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PO Box 520604
SLC, UT 84152
(801) 699-5459

INTRODUCTION

Marriott Rock Products has been requested to submit a Large Mining Operation (LMO) permit for the Rocky Pointe gravel mine in Weber and Box Elder Counties, sections 11,12,13,and 14 in Township 7 North, Range 2 West. The LMO is needed to bring Marriott Rock Products into regulatory compliance with the Utah Division of Oil Gas and Mining (DOGM). The purpose of this report is to provide a baseline characterization of soils and vegetation according to the requirements of DOGM. This information will assist in the design of a site appropriate and effective reclamation plan.

SITE DESCRIPTION

The area straddles the border of Weber and Box Elder Counties adjacent to Interstate 15. The elevation of the area is about 4300 to almost 5000 feet and averages about 16 inches of precipitation annually. The highest precipitation month in this area is April at about 1.5 inches of precipitation during the month. The freeze free season is about 156 days (NRCS, 1975).

VEGETATION

The slopes of the Rocky Point Mine boundary range from 2 to about 55 degrees. Slight variations in geology and topography, as well as past and present land use and disturbances within the area, are major determinants of soil and vegetation type. The area has a history of agriculture as some of the property has remains of orchards on it. Furthermore, it appears the area has burned in relatively recent history. As a result of this agricultural and fire history, the area is covered chiefly by early seral vegetation communities with some native bunchgrasses, abundant cheatgrass and other annual weeds (Figure 1).

Figure 1. Overview of early seral vegetation at Rocky Pointe Gravel Mine, June 2007.



balsamroot (*Balsamorhiza saggitata*). There are inclusions of other soils in the area and they include Wasatch cobbly sandy loam (gravelly subsoil variant, 10-20% slopes), and stony alluvial land.

SsF- Sterling gravelly loam 20-30% slopes.

These soils are found on alluvial fans, lake terraces, escarpments and mountain foot slopes, and were formed in very gravelly and cobbly calcareous alluvium, colluvium and mixed lake sediments derived from limestone, dolomite, sandstone and quartzite. Only a small area in the western region of the property is this soil type. The surface layer is about 16 inches deep and is a gravelly loam. Organic matter averages about 2%, CEC is about 17.5 meq/gm, EC is 0.6 Mmhos/cm, and pH is about 8.4. The subsoil is cobbly loam down to about 27 inches, and turns to very cobbly loam down to 60 inches. The potential native vegetation consists of Bluebunch wheatgrass, western wheatgrass (*Pascopyrum smithii*), sagebrush, Sandberg's bluegrass (*Poa sandbergii*), purple three awn (*Aristida purpurea*), cheatgrass (*Bromus tectorum*) and annual weeds.

Bp- Borrow pits

The material remaining is often cobbly, stony or gravelly and ranges in texture from clay loam to sand.

MbE – Manila loam 10-25% slopes

Geologically, these soils were formed as deposits from Lake Bonneville (as well as deeper water deposits) were worked and reworked in a relatively gentle manner. These lacustrine fine-grained deposits are about 20 feet thick. These soils are found on mountain slopes and high lake terraces and were formed in colluvium, residuum, and alluvium derived mainly from sandstone, limestone and quartzite. The northern most region of the property is this soil type. The surface layer is a loam about 13 inches thick. Organic matter is about 2.5% in these upper layers, CEC is about 25 meq/gm of soil, EC about 0.6 Mmhos/cm, and pH is about 7.7. The subsoil is a silty clay loam in the upper 7 inches and a silty clay to clay in next 12 inches, and silty clay in lower 10 inches, for a total subsoil depth of about 32 inches. The substratum is a cobbly silt loam to weathered sandstone and fractured limestone to 57 inches deep. The native vegetation of this soil type consists of Bluebunch wheatgrass, sagebrush, Great Basin Wildrye (*Elymus cinereus*), serviceberry (*Amelanchier utahensis*), snowberry (*Symphoricarpos oreophilus*), and bitterbrush (*Pushia tridentata*).

MgE2 – Marriott Series.

These soils can be indicative of younger alluvial fan deposits during the Holocene Epoch. They are generally a mixture of sand and gravel and some larger cobbles deposited by streams and these deposits are about 20 feet thick. These soils are relatively high in calcium carbonate that occur on alluvial and colluvial fans on high lake terraces because they were formed in gravelly calcareous alluvium and colluvium. The surface layer is 11 to 19 inches thick of gravelly sandy loam, and gravelly sandy loam is present to 60 inches. This soil is located in the central region of the property. Organic matter is about 0.9%, pH is about 8.8, CEC is about 9.2 meq/gm, EC is 0.5 Mmhos/cm. This soil has historically been used for orchards as it can hold a fair amount of moisture.

RkE2 – Ridd rocky sandy loam 10-30 slopes

These soils are similar to the Ridd stony sandy loam described above in the Ridd Rock Outcrop Complex. The Ridd rocky sandy loam is located in the southern region of the property.

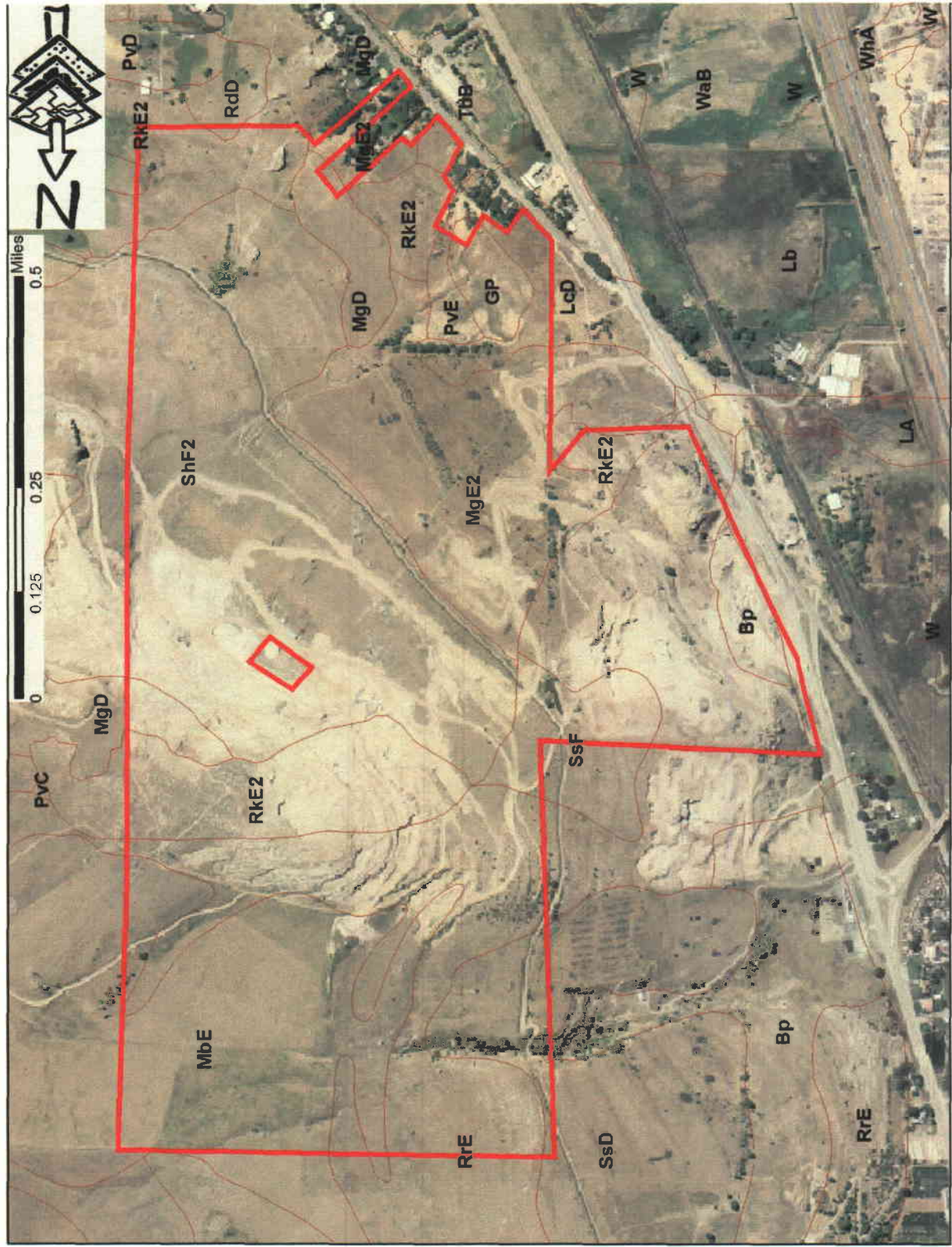
ShF2 – Sterling very rocky loam 6-50% slopes

Sterling very rocky loam is similar to the Sterling gravelly loam, however, Sterling very rocky loam generally occurs at higher elevations and is more eroded. Sterling very rocky loam is located in the central region of the property. It consists of alluvium and colluvium of weathered limestone. This soil has a stony surface layer and is cobbly and stony throughout the profile (to 60 inches).

GP- Gravel Pits



Figure 3. Soil types at Rocky Pointe



METHODS

To ascertain the range of variability for vegetation cover, ground cover, and species composition, 10 transects of 100 feet each were established in areas determined to be representative of the vegetation of the area. Once within a stand of typical vegetation, a pin was spun to randomly determine the azimuth of the transect. At each foot, vegetation (by species), litter, rock, gravel, or bare ground was recorded. The ten transects were placed in areas of the mine that would reveal the various condition and/or seral stages of vegetation at the mine.

RESULTS

As mentioned earlier, vegetation communities at the site are in various stages of recovery/regeneration and/or degeneration according to past disturbance histories and land use practices. As such, at this point in time, it is difficult to accurately characterize the vegetation at the Rocky Pointe Gravel Mine site for reclamation goals. It is believed that an average of all vegetation transects will suffice for a vegetation cover estimate.

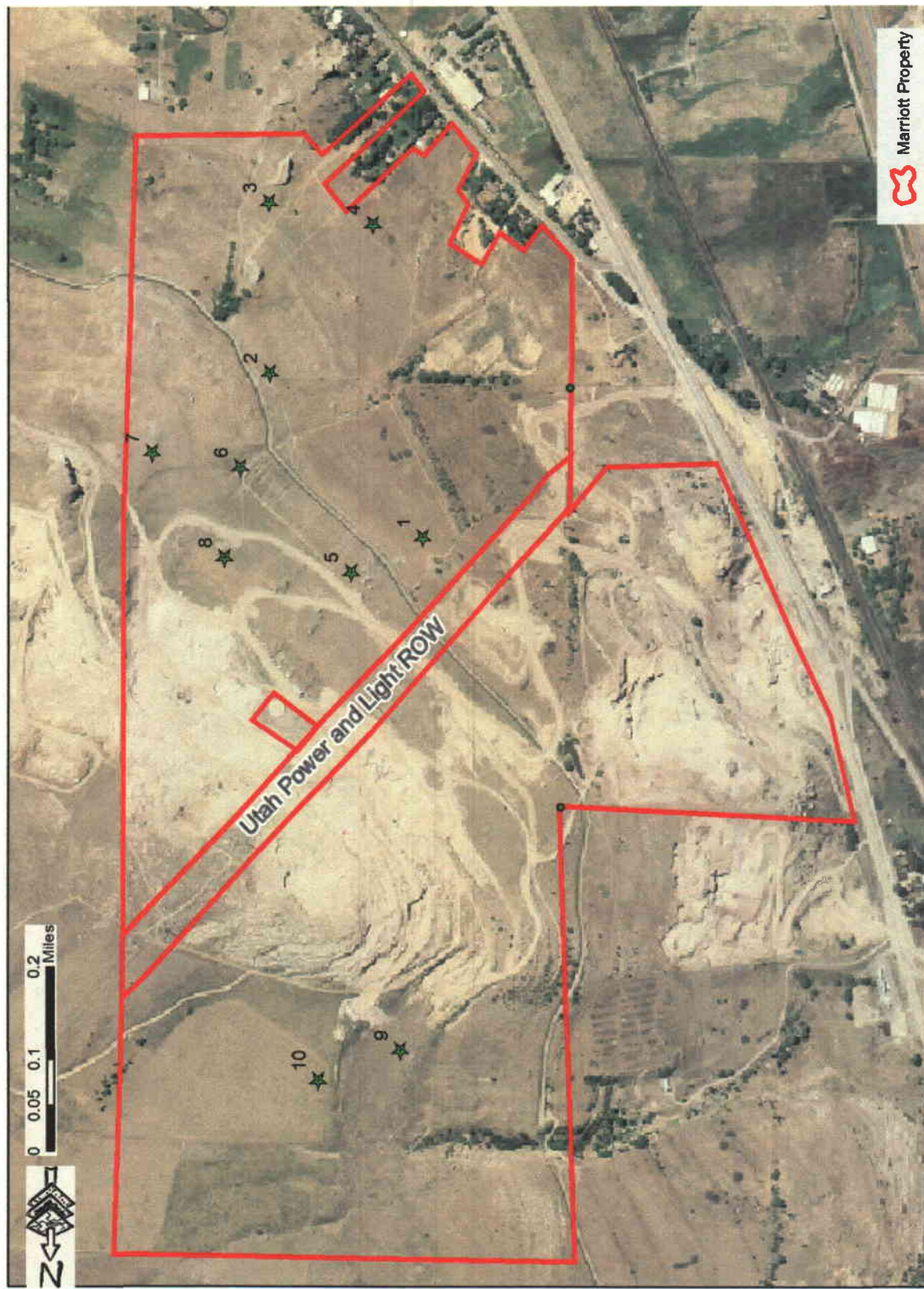
Table 1 shows the tabulated results of the vegetation cover at the Rocky Point Gravel Mine. The average vegetation cover is 46% +/- 10%. This estimate includes non-native annual grasses as well as other non-native species. Bare soil averaged at most 2%. Therefore, the revegetation goal for the area post mining would be 32% vegetation cover.



Table 1. Tabulated results for vegetation cover at the Rocky Point Gravel Mine.

Marriott Rock Products Rocky Point Gravel Mine		n=10						
Common Name	ScientificName	Avg	StDev	StError	Low	High	Rel Cover	Frequency
Total Vegetation Cover	Total Vegetation Cover	45.600	9.755	3.085	30.000	61.000		100.00
Litter	Litter	45.700	9.844	3.113	31.000	60.000		100.00
Rock	Rock	4.500	4.726	2.363	1.000	11.000	0.00	100.00
Gravel	Gravel	7.250	8.285	3.283	1.000	30.000	0.00	100.00
Bare Soil	Bare Soil	1.714	0.756	0.286	1.000	3.000	0.00	100.00
Total Ground Cover	Total Cover	98.800	1.033	0.327	97.000	100.000		100.00
Cool season perennial grasses								
Bluebunch wheatgrass	Agropyron spicatum	<1					<1	10.00
Sandberg's bluegrass	Poa sandbergii	<1					<1	20.00
Warm season perennial grasses								
Purple three awn	Aristida purpurea	1.600	2.119	0.670	0.000	5.000	3.55	40.00
Sand dropseed	Sporobolus cryptandrus	1.600	2.757	0.872	0.000	8.000	3.55	40.00
Introduced perennial grasses								
Intermediate wheatgrass	Agropyron intermedium	4.900	10.546	3.335	0.000	29.000	10.86	20.00
Bulbous bluegrass	Poa bulbosa	4.400	5.317	1.681	0.000	15.000	9.76	60.00
Annual grasses								
Jointed goat grass	Aegilops cylindricum	6.100	12.441	3.934	0.000	41.000	13.53	80.00
Cheatgrass	Bromus tectorum	13.900	11.638	3.680	2.000	41.000	30.82	100.00

Figure 4. Locations of vegetation transects



The following are photos of each transect:

Figure 5. Transect 1 (pointing SSE)



Figure 6. Transect 2 (pointing WSW)

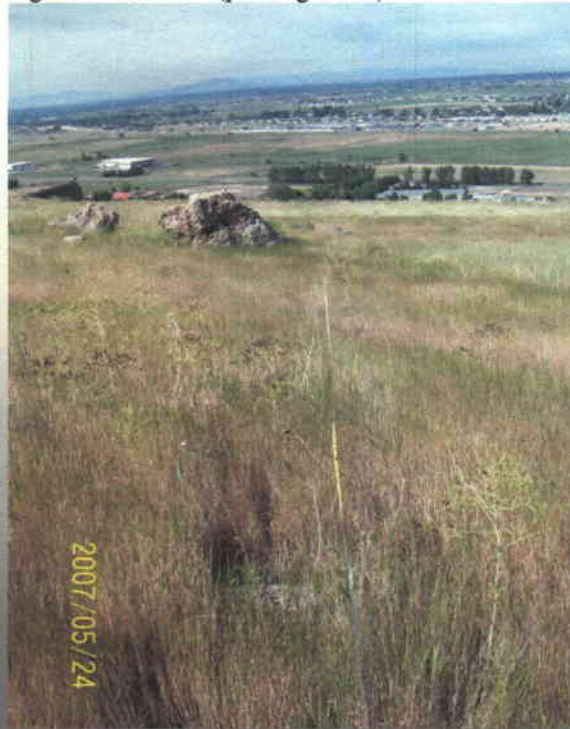


Figure 7. Transect 3 (pointing SSW)

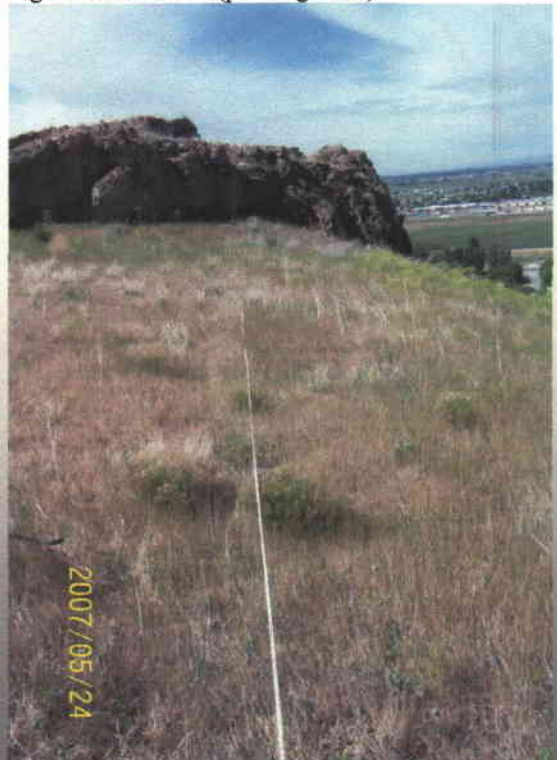


Figure 8. Transect 4 (pointing NNW)

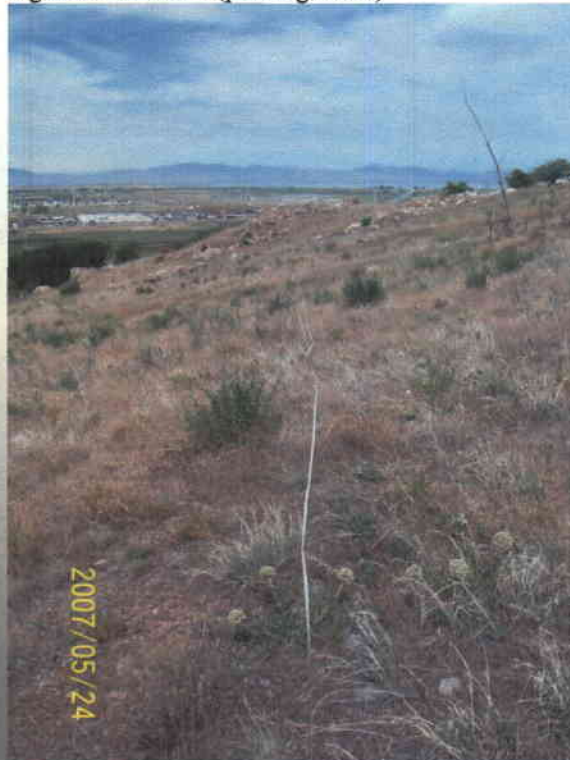


Figure 8. Transect 5 (pointing S)

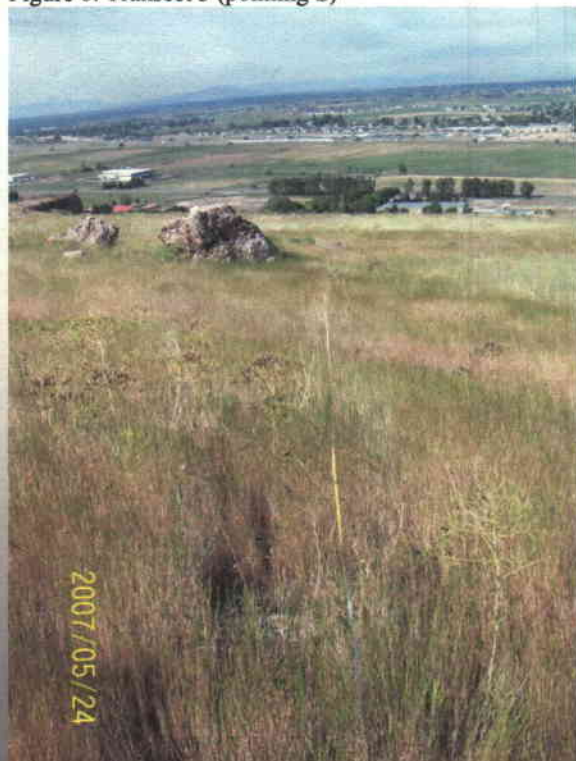


Figure 9. Transect 6 (pointing E)



Figure 10. Transect 7 (pointing SSW)



Figure 11. Transect 8 (pointing W)

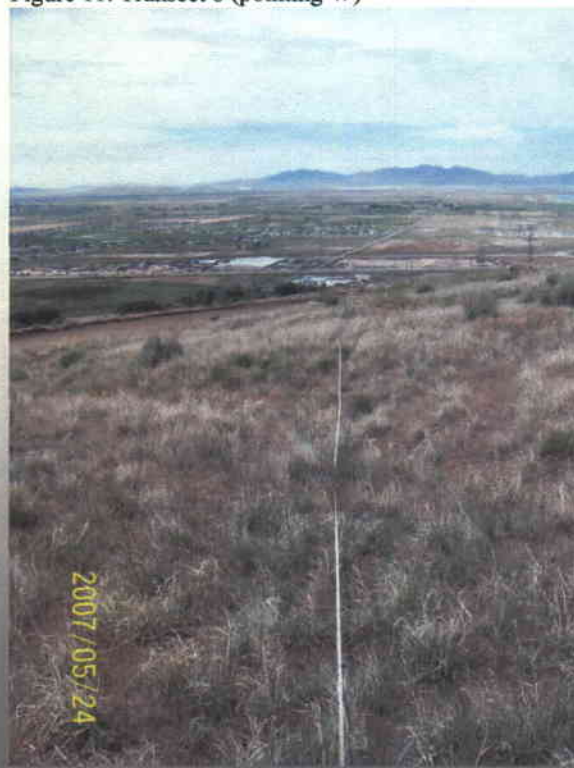


Figure 12. Transect 9 (pointing NNE)

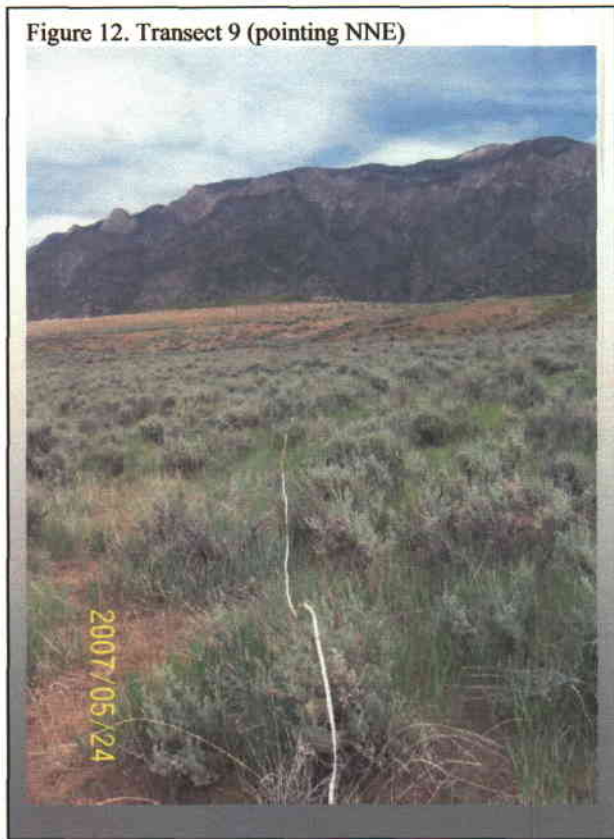
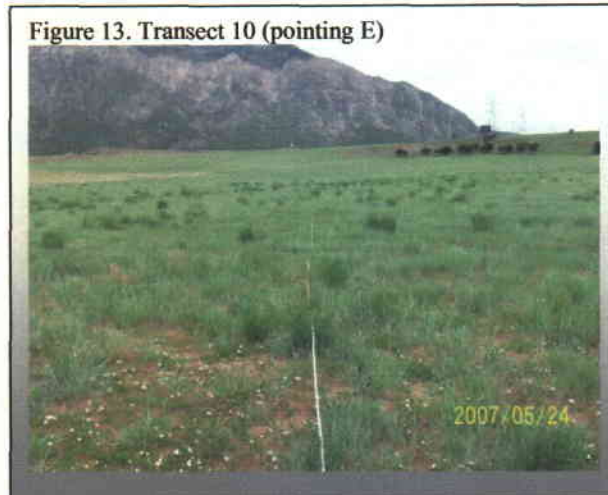


Figure 13. Transect 10 (pointing E)



DISCUSSION

The present vegetation reflects the long history of different land uses around the Rocky Point Gravel Pit. A combination of agriculture, mining and range fires has shaped the condition of the current vegetation communities. As a result, much of the vegetation at the mine consists of early seral and weedy vegetation species. The potential native vegetation communities include species such as sagebrush (about 20-30% cover), arrow leaf balsamroot, Sandberg's bluegrass and bluebunch wheatgrass.

However, since the post mining land use of this area is projected to be a subdivision, much of the reclamation and revegetation in the area will likely be intensively landscaped areas. However, there will likely be some areas that will need to be reclaimed until the area is ready for home construction or to be landscaped.

An appropriate reclamation seed mix for this area can be:

Common Name	Scientific Name	Rate (per acre)
Grasses		
Indian ricegrass	<i>Oryzopsis hymenoides</i>	4
Bluebunch wheatgrass	<i>Pseudoroegneria spicata</i> <i>ssp. spicata</i>	4
Sandberg's bluegrass	<i>Poa secunda</i>	0.5
Bottlebrush squirreltail	<i>Elymus elymoides</i>	2
Forbs		
Globemallow	<i>Sphaeralcea coccinea</i>	0.5
Shrubs		
Rabbitbrush	<i>Chrysothamnus nauseosus</i>	0.5
Sagebrush	<i>Artemisia tridentata</i> var <i>vaseyana</i>	0.1
TOTAL		11.4 lbs/ acre or 58 seeds/ sq ft



**APPENDIX B-
STORMWATER MANAGEMENT
PLAN**

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SECTION 1

NOTICE OF INTENT FORM

(A copy of the notice of intent is provided on the following pages.)

SECTION 2

STORM WATER POLLUTION PREVENTION PLAN

INTRODUCTION

The Rocky Point Gravel Pit is owned and operated by Marriott Rock Products, LLC, and will produce sand, gravel and rock products. Native rock will be excavated from the gravel pit and then crushed and screened to produce the desired products. Equipment and materials used on site are typical for a gravel pit operation. Equipment will consist of excavators, tractors, loaders, trucks, crushers, screens, and an air drill. Facilities include a scale with a scale house, storage sheds, and a fuel station.

The Stormwater Pollution Prevention Plan is intended to comply with the requirements given in UTR 000000. Industrial activities associated with the Rocky Point Gravel Pit are consistent standard industry classification No. 3295 (minerals and earths, ground or otherwise treated). The applicable industrial storm water requirements are affiliated with Sector E as defined in Appendix II.E of Permit No. UTR000000. Some of the applicable information and requirements from Appendix II.E are repeated in this document.

POLLUTION PREVENTION TEAM

The pollution prevention team members and their responsibilities for the Storm Water Pollution Prevention Plan are listed in Table 2-1.

TABLE 2-1
POLLUTION PREVENTION TEAM MEMBERS

Name/Title	Responsibilities
Randy Marriott Owner/Operator	Management and coordination
J. D. Marriott Manager	Sampling, reports, and records
Robert Devries Project Foreman	Plan implementation, inspections, and updates

POTENTIAL POLLUTANT SOURCES

A site map outlining the drainage area, storm drain controls, drainage patterns, structures, fuel storage area, equipment wash area, loading area, and materials storage area is provided on Figure 2-1.

The primary potential pollutant source is sediment from mining, processing, and loading operations. Due to the nature of gravel mining operations, disturbed areas and stockpiles will be exposed to precipitation. Other potential contamination sources include a fueling station and the trucks and equipment that will be used on-site. A fuel station consisting of a 2,000 gallon above ground storage tank will be located on the site. Fluid leaks from equipment and trucks also present a minor potential source of pollutants. Specific potential pollutant sources are identified in Table 2-1. Although this is generally a new facility, the site has been used in the past for smaller scale gravel mining and processing operations. There are no known significant leaks of toxic or hazardous pollutants on the site from previous industrial or gravel mining operations. A site map showing key facilities is provided on Figure 2-1.

MEASURES AND CONTROLS

Potential contamination from materials used and stored on the site will be minimized using good housekeeping, preventative maintenance, spill prevention, inspections, recordkeeping, prevention of non-storm water discharges, sediment/erosion control, and management of runoff. Specific procedures and requirements are outlined below in Table 2-2. All measures and controls will be implemented upon approval of the permit and commencement of gravel mining and processing activities.

TABLE 2-2. POTENTIAL POLLUTANT SOURCES

Description of Areas and/or Activities	Exposed Materials	Pollutant Parameter
Fueling Station: An on-site fueling station is provided for use by gravel pit vehicles and equipment.	Fuel spills	Diesel fuel
Materials Storage: The equipment maintenance materials are stored inside a storage shed where they are not exposed to precipitation. These materials are pollution sources only if they are stored, handled or disposed improperly.	None	Oils, grease, solvents, anti-freeze, and battery acid
Equipment Operation and Parking Areas: Equipment is operated and parked in areas exposed to precipitation. Most of the areas where equipment operates are gravel surfaces. Grading will direct runoff from these areas toward containment/infiltration areas.	Leaks from vehicles and equipment, gravel and roadbase surfaces	Oil, grease and anti-freeze
Material Processing Areas: Gravel crushing and screening operations have the potential to generate dust and particulates that are exposed to precipitation.	Sand, aggregate and particulates	Sediment
Materials Storage Activities: Sand and aggregate materials are stored in stockpiles which are a potential source of sediment when exposed to precipitation.	Sand, aggregate and particulates	Sediment
Haul Roads: Haul roads, which will be gravel and roadbase surfaces, have some potential for dust and particulate generation.	Gravel and roadbase surfaces	Sediment

TABLE 2-3. MEASURES AND CONTROLS

Management Area / Category	Measures and Controls
GOOD HOUSEKEEPING	
Materials Storage Area	<ul style="list-style-type: none"> • Store all used materials in appropriate closed containers with labels plainly identifying the contents (e.g., used oil, radiator fluid, etc.).
	<ul style="list-style-type: none"> • Use only dry cleanup methods for oil and solvent spills, if wet cleanup methods present a risk of storm water contamination.
	<ul style="list-style-type: none"> • Provide indoor storage whenever possible for materials with significant potential for storm water pollution.
	<ul style="list-style-type: none"> • Maintain MSDS sheets for each material used and stored on-site.
	<ul style="list-style-type: none"> • Provide safety and materials handling training to employees.
Equipment Parking and Operation Areas	<ul style="list-style-type: none"> • Use drip pans for any vehicles or equipment with fluid leaks.
Operation and Stockpile Areas	<ul style="list-style-type: none"> • Grade mining, stockpile, and processing areas to drain towards containment areas
	<ul style="list-style-type: none"> • Water haul roads, stock piles, and other work areas as necessary to control dust
PREVENTATIVE MAINTENANCE	
Storm Drain Facilities	<ul style="list-style-type: none"> • Verify monthly that storm drain inlet boxes, cleanouts, and flow control structures are in acceptable condition and functioning properly. Make any necessary repairs.
Vehicles and Equipment	<ul style="list-style-type: none"> • Inspect at least annually drip pans and vehicle mounted drip containment devices for leaks, corrosion or wear. Replace or repair as necessary.
SPILL PREVENTION AND RESPONSE	
Overall Site	<ul style="list-style-type: none"> • Maintain spill response materials capable of mitigating small fuel, oil, or solvent spills
	<ul style="list-style-type: none"> • Develop procedures for containing large spills of fuel, oil, or solvents.
INSPECTIONS	
Overall Site	<ul style="list-style-type: none"> • Designate qualified individuals to be responsible for facility inspections.
	<ul style="list-style-type: none"> • Develop inspection checklists and procedures for tracking deficiencies and verifying deficiencies are corrected.
	<ul style="list-style-type: none"> • When the facility is in operation, perform monthly inspections of the following areas: storm drain facilities, structures, and grading; fueling station and above ground tank; materials storage areas; vehicle and equipment parking and operation areas; and loading and unloading areas.

EMPLOYEE TRAINING	
Overall Site	<ul style="list-style-type: none"> • Train employees to implement their responsibilities as defined in the storm water pollution prevention plan.
	<ul style="list-style-type: none"> • Provide annual employee training to address the following areas: summary of the facility's pollution prevention plan requirements; used oil management; spill prevention, response and control; cleanup of small spills; fueling procedures; and general good housekeeping practices.
RECORDKEEPING AND INTERNAL REPORTING	
Overall Site	<ul style="list-style-type: none"> • Maintain records of monthly inspections and maintenance activities.
	<ul style="list-style-type: none"> • Record descriptions of incidents such as spills or other discharges.

Non-storm Water Discharges

Allowable non-storm water discharges to the storm drain system are limited to the following sources in accordance with Permit No. UTR0000000, Part II.A.2: discharges from fire fighting activities; fire hydrant flushings; potable water sources including waterline flushings; drinking fountain water; irrigation drainage; lawn watering; routine external building washdown that does not use detergents or other compounds; pavement washwaters where spills or leaks of toxic or hazardous materials (including oils and fuels) have not occurred (unless all spilled material has been removed) and where detergents are not used; air conditioning condensate; uncontaminated compressor condensate; uncontaminated springs; uncontaminated ground water; and foundation or footing drains where flows are not contaminated with process materials such as solvents.

Potential sources of non-storm water discharges are limited to leaks in the waterline that supplies the facility or to accidental discharges or excessive watering for dust control by the water truck. Non-storm water discharges from these sources are unlikely, and if they do occur the discharges will not be contaminated with toxic or hazardous materials.

Permit No. UTR0000000 (Appendix II.E) requires certification that the discharge has been evaluated for the presence of non-storm water discharge. This certification, which is required within 180 days from the beginning of mining operations, will be based upon visual observations after the gravel permit begins operation. The storm drain system at the site will be evaluated for non-storm water discharges by observing the storm drain outfall on monthly inspections during dry periods. The storm drainage system consists mostly of ditches and open channels. Therefore observation for non-storm water discharges is relatively straight forward.

Sediment and Erosion Control

Areas where sediment and erosion control are anticipated include active mining areas, steep slopes, operations areas, and ditches along haul roads. Because the mined slopes and operations

areas are continually being disturbed and modified, there are no practical stabilization measures that can be implemented in these areas while the facility is in operation. Therefore, sediment and erosion control will be accomplished by grading mining and operations areas so that runoff is directed to containment/infiltration basins. Management of runoff and the retention/infiltration basins are discussed below.

Management of Runoff

The Rocky Point Gravel site is located on a moderately sloped ridge. Native soils are sandy loams with cobbles and gravel, which are highly permeable. Undisturbed areas have vegetative cover consisting mostly of grasses and sage brush with grass understory. The undisturbed ground generally slopes away from the mining operations area. Runoff from undisturbed areas onto disturbed areas is expected to be insignificant and no controls to divert runoff from the excavation area will be needed. Drainage areas and other key features are shown on Figure 2-1. An irrigation canal traverses the site and divides the site into two subbasins. These subbasins are labeled Phase 1 and Phase 2 because these correspond to the planned timing of mining operations. Phase 1, located below the canal, is the planned area of initial mining operations, and Phase 2, located above the canal is planned area for future expansion of mining operations. The irrigation canal will be preserved and protected from runoff inflow originating in areas disturbed by industrial activities.

The operations areas, processing areas, haul roads, storage areas, and all other disturbed areas will be graded to direct storm water toward containment and infiltration areas. These basins will have sufficient capacity to contain the runoff from the 25-year 24-hour storm event without consideration of infiltration rates. Runoff volumes are calculated using SCS curve number methodology as outlined in "Urban Hydrology for Small Watersheds, Technical Release 55." Results are summarized in Table 2-4. Detailed calculations are provided in Appendix A.

TABLE 2-4. RUNOFF CONTAINMENT REQUIREMENTS

Drainage Area	Potential Tributary Area ¹ (acres)	Required Storage	
		Unit Volume (acre-feet/acre)	Total Volume ² (acre-feet)
Phase 1 - Area Below Canal	60	0.103	6.2
Phase 2 - Area Above Canal	167	0.103	17.2

1. Total acreage of operations areas, processing areas, haul roads, storage areas, and all other areas disturbed by industrial activities.
2. Volume required to contain all projected runoff from the 25-year, 24-hour storm event.

It should be noted that the total required storage volume will vary with time, depending upon how much of the site is excavated and disturbed. Storm water containment/infiltration areas will also be relocated as new areas are excavated. The total required storage volume as presented in Table 2-4 will not be required until gravel mining and process operations occupy the entire potential tributary area.

The Phase 1 area, consisting of the gravel mining and processing operation below the canal, is currently graded to existing storm water containment/infiltration areas located mostly along the access roadways within the operations area as shown on Figure 2-1. Other existing controls include sediment control basins located in the drainage ditches along access roadways. Existing sediment control basins are constructed by widening and deepening sections of the roadway drainage ditches and adding an outlet pipe about higher than the ditch flow line. Slower flow velocities through the basin promotes infiltration and settling of the sediment. A representation of a typical sediment basin is shown in Figure 2-2.

As excavation of the Phase 1 continues, the area will be graded at a minimum of 0.5% toward the base of the actively mined slope. Grading plans and typical cross sections are shown on the figures in the Mining Permit Application. The containment area created by this grading plan will provide over 40 acre-feet of storage at the completion of mining operations, which far exceeds the storage requirement for the Phase 1 area. Because slopes are gradual and the planned grading forms a low point without embankments, no emergency overflow or additional engineering controls are needed.

The Phase 2 area, consisting of the gravel mining and processing operation above the canal will be graded to drain to a containment pond that will be excavated just above the canal. The detention basin will be expanded as additional area becomes tributary. Berms and ditches will be used to direct runoff to the containment pond. Approximate dimensions of rectangular containment/infiltration excavation with a volume of 17 acre-feet is 280 feet wide by 620 feet long by 5 feet deep (numerous layout dimensions are possible). A minimum of 1 foot of freeboard should also be provided. Containment/infiltration areas are shown on Figure 2-1 and a detail of the Phase 2 containment/infiltration area is shown in Figure 2-3.

Relocation of the haul roads due to future expansion of the operations area could make it impractical to direct runoff from the lower section of the haul road to the runoff containment area. If runoff from the lower section of the haul roads cannot be directed to containment areas, then additional sediment controls will be added along the haul road and the runoff will be discharged to existing drainage swells and culverts beneath Highway 89. Sediment controls along the haul road will consist of a series of settling basins similar to those already in use as described above. The existing sediment basins appear to be functioning as intended.

COMPREHENSIVE SITE COMPLIANCE EVALUATION

Evaluation Requirements

Qualified personnel will conduct comprehensive site compliance evaluations at intervals of not less than once a year. Evaluations shall include the following activities, observations and analysis:

1. Areas contributing to a storm water discharge associated with industrial activity shall be visually inspected for evidence of, or the potential for, pollutants entering the drainage system.
2. Measures to reduce pollutant loadings (Table 2-3) shall be evaluated to determine whether they are adequate and properly implemented in accordance with the terms of the permit or whether additional control measures are needed.
3. Structural storm water management measures including ditches, runoff containment areas, erosion control measures, and any other structural pollution prevention measures identified in the plan shall be observed to ensure that they are operating correctly.
4. A visual inspection of equipment needed to implement the plan, such as spill response equipment, shall be made.

Storm Water Management Plan Updates

Based on the evaluation results, the storm water management plan will be updated as necessary. The updates will consider descriptions of potential pollutant sources identified in the plan and pollution prevention measures and controls. The storm water management plan will be updated within 2 weeks of the evaluation and shall provide for implementation of any changes to the plan in a timely manner, but in no case more than 12 weeks after the evaluation.

Evaluation Reporting

A report summarizing the scope of the evaluation, personnel making the evaluation, the date(s) of the evaluation, major observations relating to the implementation of the storm water pollution prevention plan, and actions taken shall be made and retained by Marriott Rock Products as part of the storm water pollution prevention plan for at least 3 years after the date of the evaluation. The report shall identify any incidents of noncompliance. Where a report does not

identify any incidents of noncompliance, the report shall contain a certification that the facility is in compliance with the storm water pollution prevention plan and this permit. The report shall be prepared and signed in accordance with the requirements of Permit No. UTR000000.

Where the compliance evaluation schedules overlap with inspections required under Table 2-3, the compliance evaluation may be conducted in place of an inspection.

SECTION 3

MONITORING REQUIREMENTS

GENERAL

As indicated in Section 2, storm water discharges from the industrial area of the site are unlikely because these areas will be graded to direct runoff to containment/infiltration areas. If future site expansion and relocation of the haul roads makes complete containment of the runoff impractical, then the monitoring requirements as outlined in this section will apply.

QUARTERLY VISUAL EXAMINATION OF STORM WATER QUALITY

Marriott Rock Products will perform and document a visual examination of a storm water discharge associated with industrial activity. The examination will be made at least once in each designated period, as described below, during facility operation in the daylight hours unless there is insufficient rainfall or snow melt to produce a runoff event. Sampling requirements are as follows:

Sampling Periods - Examinations shall be conducted in each of the following periods for the purposes of visually inspecting storm water quality associated with storm water runoff or snow melt: January through March; April through June; July through September; and October through December.

Sample and Data Collection - Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed one hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water contamination. The examination must be conducted in a well lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable, the same individual will carry out the collection and examination of discharges for the life of the permit.

Adverse Conditions - When unable to collect samples over the course of the visual examination period, as a result of adverse climatic conditions, Marriott Rock Products will document the reason for not performing the visual examination and retain this

documentation onsite with the records of the visual examinations. Adverse weather conditions which may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricanes, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

Visual Storm Water Discharge Examination Reports - Visual examination reports will be maintained onsite in the pollution prevention plan. The report shall include the examination date and time, examination personnel, the nature of the discharge (i.e., runoff or snow melt), visual quality of the storm water discharge (including observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution), and probable sources of any observed storm water contamination.

Sampling Locations - Samples for storm water examinations will be obtained at all storm water outfalls for the site. Storm water outfalls will be eliminated or minimized by grading the site toward containment ponds.

Inactive and Unstaffed Site - If unable to conduct visual storm water examinations at an inactive and unstaffed site, Marriott Rock Products, may exercise a waiver of the monitoring requirement as long as the facility remains inactive and unstaffed. The facility must maintain a certification with the pollution prevention plan stating that the site is inactive and unstaffed, so that performing visual examinations during a qualifying event is not feasible.

ANALYTICAL MONITORING REQUIREMENTS

If storm water discharges are occurring, analytical monitoring is required every other year, beginning in the second year after the permit is obtained. Analytical monitoring will consist of quarterly sampling. Parameters to be monitored are presented in Table 3-1.

TABLE 3-1. ANALYTICAL MONITORING REQUIREMENTS

Pollutant of Concern	Monitoring Cut-Off Concentration
Total Suspended Solids (TSS)	100 mg/l
Total Recoverable Iron	1.0 mg/l
pH	6.5 to 9.0

Monitoring Periods

If subject to analytical monitoring requirements, samples shall be collected during the sampling periods of: January to March, April to June, July to September, and October to December for the years specified above.

Sample Type

A minimum of one grab sample shall be taken. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. The required 72-hour storm event interval is waived where the preceding measurable storm event did not result in a measurable discharge from the facility. The required 72-hour storm event interval may also be waived where the facility documents that less than a 72-hour interval is representative for local storm events during the season when sampling is being conducted. The grab sample shall be taken during the first 30 minutes of the discharge. If the collection of a grab sample during the first 30 minutes is impracticable, a grab sample can be taken during the first hour of the discharge, and the discharger shall submit with the monitoring report a description of why a grab sample during the first 30 minutes was impracticable. Sampling locations should be selected to provide samples of storm water discharge before it is mixed with non-storm water discharge or storm water from non-industrial areas.

Sampling Waiver

Sampling waivers may be obtained for the following conditions:

Adverse Conditions - If unable to collect samples within a specified sampling period due to adverse climatic conditions, a substitute sample may be obtained from a separate qualifying event in the next period. Results will be submitted along with the results for the routine sample in that period. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

Low Concentration Waiver - When the average concentration for a pollutant calculated from all monitoring data collected from an outfall during the first year monitoring period (one full year) is less than the corresponding value for that pollutant listed in Table 3-1 under the column Monitoring Cut-Off Concentration, then the monitoring and reporting requirements for the following reporting period may be waived. The facility must submit to the Executive Secretary, in lieu of the monitoring data, a certification that there has not been a significant

change in industrial activity or the pollution prevention measures in the area of the facility that drains to the outfall for which sampling was waived.

Inactive and Unstaffed Site - If Marriott Rock Products is unable to conduct quarterly analytical storm water sampling because the site is inactive and unstaffed, the facility may exercise a waiver of the monitoring requirements as long as the facility remains inactive and unstaffed. The facility must submit to the Executive Secretary, in lieu of monitoring data, a certification statement on the Storm Water Discharge Monitoring Report (SWDMR) stating that the site is inactive and unstaffed so that collecting a sample during a qualifying event is not possible.

REPORTING

Marriott Rock Products shall submit analytical monitoring results for each outfall associated with industrial activity, or a certification in accordance with the applicable waivers as described above. Results shall be submitted on Storm Water Discharge Monitoring Report (SWDMR) form postmarked no later than the 31st day of the following March following the end of the one year reporting period. For each outfall, one signed SWDMR form must be submitted for each event sampled. Signed copies of SWDMRs, or said certifications, shall be submitted to the Executive Secretary as listed in Section 1.

STORMWATER CALCULATIONS



PROJECT Marriott Rock Products SHEET NO. 1 OF 8
Rocky Pt. Gravel Pit
DESCRIPTION Runoff Volumes PROJECT NO. _____
CALC. BY JDB DATE _____ CHKD. BY _____ DATE _____

Calculate the projected runoff volume for the Rocky Point Gravel Pit, using the SCS Curve No methodology.

Design Storm

use the 25-yr, 24-hr storm event Depth obtained from the NOAA website for a point near the center of the site.

Location: 41.343° Latitude
112.024° Longitude

From Web Site: d = 3.24 inches (100-yr, 24-hr event)
(<http://hdsc.nws.noaa.gov/>)

Site Conditions

assume bare ground for all mining and processing areas.

Soils: Above the canal - Soil Group - Sterling Rock Loam
Below the canal - Soil Group - Marriott Eddy, sandy loam

Characteristics - Rapidly permeable

Hydrologic Soil Group - A

Reference: "Soil Survey Davis-Water Area", United States Department of Agriculture
July, 1968

SCS Curve No. Use CN = 77 for HSG A, bare cover

Reference: "Urban Hydrology for Small Watersheds"
TR-55, United States Department of Agriculture
June 1986



PROJECT Marriott Rock SHEET NO. 2 OF 8
Rock Point Ground Pit
 DESCRIPTION Runoff Volumes PROJECT NO. _____
 CALC. BY JDB DATE _____ CHKD. BY _____ DATE _____

Runoff Depth

- Calculate the runoff depth for the 100-yr, 24-hr storm event

$$P = 3.24 \text{ inches}$$

$$CN = 77$$

$$S = \frac{1000}{CN} - 10 = \frac{1000}{77} - 10 = 2.99$$

$$Q = \frac{[P(0.2)(S)]^2}{[P(0.8)(S)] + [(3.24) + (0.8)(2.99)]} = \frac{[(3.24)(0.2)(2.99)]^2}{[(3.24) + (0.8)(2.99)]} = 1.24 \text{ inches}$$

$$q = \frac{1.24 \text{ inches}}{12 \text{ in/ft}} (16.7 \text{ acres}) = 0.103 \text{ ac-ft/ac}$$

Runoff Volume

- The site is divided into two phases and runoff areas by a canal that traverses the site. The area below the canal is Phase 1 and the area above the canal is Phase 2.

Phase 1 (below the canal)

$$\text{Area} = 60 \text{ acres}$$

$$\text{Volume} = (60 \text{ acres}) \left(\frac{1.24}{12} \right) = 6.2 \text{ acre-feet}$$

Phase 2 (above canal)

$$\text{Area} = 16.7 \text{ acres}$$

$$\text{Volume} = (16.7 \text{ acres}) \left(\frac{1.24}{12} \right) = 1.73 \text{ acre-feet}$$

Precipitation Frequency Data Server

3/8
Page 1 of 4POINT PRECIPITATION
FREQUENCY ESTIMATES
FROM NOAA ATLAS 14

Utah 41.343 N 112.024 W 4678 feet

from "Precipitation-Frequency Atlas of the United States" NOAA Atlas 14, Volume 1, Version 4

G.M. Borrie, D. Martin, B. Lin, T. Parzybok, M. Yokta, and D. Riley

NOAA, National Weather Service, Silver Spring, Maryland, 2006

Extracted: Thu Apr 10 2008

Precipitation Frequency Estimates (inches)																		
ARI* (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.14	0.22	0.27	0.36	0.45	0.58	0.68	0.93	1.21	1.64	1.94	2.39	2.94	3.35	4.40	5.38	6.72	7.86
2	0.18	0.27	0.34	0.46	0.56	0.73	0.84	1.14	1.48	2.02	2.38	2.94	3.63	4.13	5.43	6.62	8.24	9.66
5	0.24	0.37	0.46	0.62	0.77	0.94	1.04	1.38	1.79	2.43	2.86	3.56	4.38	4.97	6.47	7.86	9.74	11.39
10	0.30	0.46	0.57	0.77	0.95	1.14	1.24	1.59	2.06	2.77	3.26	4.07	5.01	5.65	7.28	8.82	10.92	12.72
25	0.40	0.61	0.75	1.01	1.25	1.47	1.55	1.92	2.47	3.24	3.81	4.78	5.88	6.56	8.32	10.07	12.43	14.40
50	0.49	0.74	0.92	1.24	1.53	1.77	1.85	2.19	2.80	3.60	4.23	5.34	6.55	7.25	9.09	10.99	13.54	15.62
100	0.59	0.90	1.12	1.50	1.86	2.13	2.20	2.50	3.16	3.98	4.67	5.92	7.25	7.94	9.84	11.89	14.64	16.80
200	0.72	1.09	1.35	1.82	2.25	2.56	2.62	2.85	3.55	4.37	5.11	6.52	7.96	8.64	10.57	12.76	15.69	17.92
500	0.92	1.40	1.74	2.34	2.89	3.24	3.31	3.54	4.14	4.89	5.71	7.33	8.92	9.55	11.49	13.88	17.03	19.32
1000	1.11	1.69	2.09	2.82	3.49	3.87	3.93	4.16	4.62	5.29	6.17	7.97	9.67	10.24	12.16	14.69	18.01	20.33

* These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval. Please refer to the documentation for more information. NOTE: Formatting forces estimates near zero to appear as zero.

* Upper bound of the 90% confidence interval Precipitation Frequency Estimates (inches)																		
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.16	0.25	0.31	0.41	0.51	0.66	0.76	1.02	1.33	1.82	2.15	2.64	3.28	3.72	4.86	5.92	7.35	8.58
2	0.21	0.32	0.39	0.53	0.65	0.83	0.94	1.25	1.63	2.23	2.64	3.25	4.04	4.59	5.98	7.28	9.03	10.54
5	0.28	0.43	0.53	0.71	0.88	1.07	1.17	1.52	1.97	2.68	3.16	3.93	4.88	5.52	7.14	8.64	10.66	12.43
10	0.35	0.53	0.66	0.89	1.10	1.30	1.39	1.76	2.27	3.06	3.60	4.50	5.57	6.27	8.03	9.71	11.95	13.87
25	0.46	0.71	0.88	1.18	1.46	1.69	1.76	2.13	2.74	3.58	4.20	5.28	6.53	7.28	9.18	11.08	13.61	15.72
50	0.57	0.87	1.08	1.45	1.80	2.06	2.12	2.46	3.13	3.98	4.67	5.90	7.29	8.05	10.02	12.10	14.83	17.07
100	0.70	1.07	1.33	1.79	2.21	2.51	2.56	2.84	3.58	4.40	5.15	6.55	8.07	8.83	10.86	13.12	16.04	18.38
200	0.87	1.32	1.64	2.21	2.73	3.08	3.11	3.28	4.07	4.83	5.65	7.23	8.89	9.62	11.68	14.11	17.23	19.63
500	1.15	1.75	2.17	2.92	3.62	4.02	4.03	4.17	4.86	5.42	6.33	8.17	10.01	10.68	12.74	15.38	18.77	21.24
1000	1.42	2.17	2.69	3.62	4.47	4.93	4.97	5.02	5.54	5.88	6.86	8.91	10.88	11.49	13.53	16.34	19.91	22.41

* The upper bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are greater than.

** These precipitation frequency estimates are based on a partial duration series. ARI is the Average Recurrence Interval. Please refer to the documentation for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

* Lower bound of the 90% confidence interval Precipitation Frequency Estimates (inches)																		
ARI** (years)	5 min	10 min	15 min	30 min	60 min	120 min	3 hr	6 hr	12 hr	24 hr	48 hr	4 day	7 day	10 day	20 day	30 day	45 day	60 day
1	0.14	0.22	0.27	0.36	0.45	0.58	0.68	0.93	1.21	1.64	1.94	2.39	2.94	3.35	4.40	5.38	6.72	7.86
2	0.18	0.27	0.34	0.46	0.56	0.73	0.84	1.14	1.48	2.02	2.38	2.94	3.63	4.13	5.43	6.62	8.24	9.66
5	0.24	0.37	0.46	0.62	0.77	0.94	1.04	1.38	1.79	2.43	2.86	3.56	4.38	4.97	6.47	7.86	9.74	11.39
10	0.30	0.46	0.57	0.77	0.95	1.14	1.24	1.59	2.06	2.77	3.26	4.07	5.01	5.65	7.28	8.82	10.92	12.72
25	0.40	0.61	0.75	1.01	1.25	1.47	1.55	1.92	2.47	3.24	3.81	4.78	5.88	6.56	8.32	10.07	12.43	14.40
50	0.49	0.74	0.92	1.24	1.53	1.77	1.85	2.19	2.80	3.60	4.23	5.34	6.55	7.25	9.09	10.99	13.54	15.62
100	0.59	0.90	1.12	1.50	1.86	2.13	2.20	2.50	3.16	3.98	4.67	5.92	7.25	7.94	9.84	11.89	14.64	16.80
200	0.72	1.09	1.35	1.82	2.25	2.56	2.62	2.85	3.55	4.37	5.11	6.52	7.96	8.64	10.57	12.76	15.69	17.92
500	0.92	1.40	1.74	2.34	2.89	3.24	3.31	3.54	4.14	4.89	5.71	7.33	8.92	9.55	11.49	13.88	17.03	19.32
1000	1.11	1.69	2.09	2.82	3.49	3.87	3.93	4.16	4.62	5.29	6.17	7.97	9.67	10.24	12.16	14.69	18.01	20.33

Precipitation Frequency Data Server

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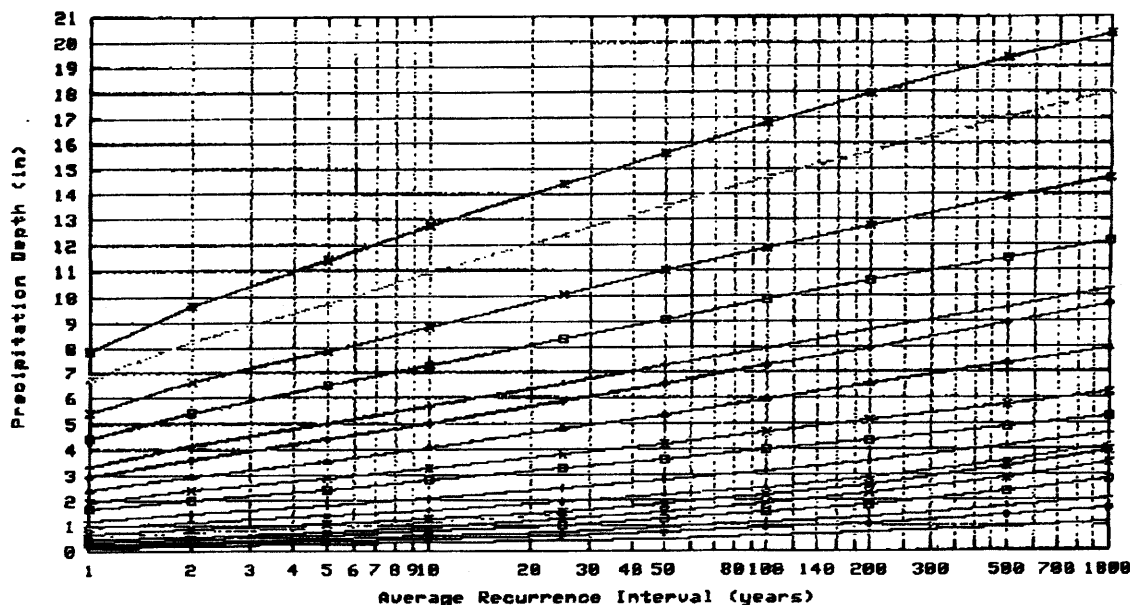
1	0.12	0.19	0.23	0.32	0.39	0.52	0.61	0.85	1.11	1.49	1.76	2.17	2.66	3.04	3.99	4.91	6.13	7.18
2	0.16	0.24	0.30	0.40	0.50	0.65	0.76	1.04	1.36	1.83	2.17	2.67	3.28	3.74	4.92	6.04	7.52	8.82
5	0.21	0.33	0.40	0.54	0.67	0.83	0.94	1.25	1.64	2.20	2.60	3.23	3.95	4.50	5.86	7.17	8.88	10.39
10	0.26	0.40	0.50	0.67	0.83	1.00	1.11	1.44	1.87	2.50	2.95	3.68	4.51	5.10	6.59	8.03	9.94	11.59
25	0.34	0.52	0.64	0.86	1.07	1.26	1.36	1.71	2.21	2.91	3.44	4.30	5.26	5.90	7.52	9.15	11.29	13.09
50	0.40	0.61	0.76	1.02	1.26	1.48	1.58	1.93	2.48	3.25	3.80	4.78	5.85	6.49	8.19	9.96	12.26	14.16
100	0.47	0.72	0.89	1.20	1.49	1.73	1.84	2.16	2.75	3.55	4.17	5.27	6.44	7.09	8.84	10.75	13.20	15.20
200	0.55	0.84	1.04	1.40	1.74	2.00	2.12	2.41	3.02	3.88	4.54	5.76	7.03	7.67	9.45	11.49	14.09	16.15
500	0.67	1.02	1.26	1.70	2.10	2.38	2.54	2.90	3.43	4.30	5.03	6.42	7.80	8.42	10.22	12.41	15.19	17.33
1000	0.77	1.17	1.45	1.95	2.41	2.72	2.90	3.31	3.73	4.63	5.40	6.92	8.39	8.98	10.78	13.06	15.98	18.16

* The lower bound of the confidence interval at 90% confidence level is the value which 5% of the simulated quantile values for a given frequency are less than.

** These precipitation frequency estimates are based on a partial duration maxima series. ARI is the Average Recurrence Interval.

Please refer to the [documentation](#) for more information. NOTE: Formatting prevents estimates near zero to appear as zero.

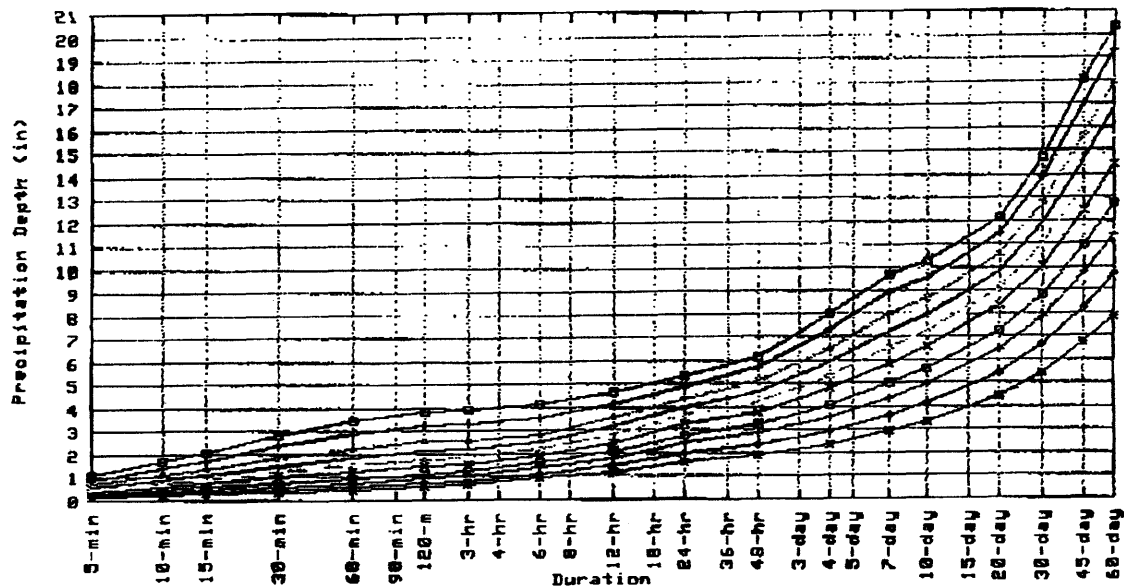
Partial duration based Point Precipitation Frequency Estimates - Version: 4
41.343 N 112.024 W 4678 ft



Thu Apr 10 17:29:16 2008

Duration			
5-min	—	48-hr	—
10-min	—	4-day	—
15-min	—	7-day	—
30-min	—	10-day	—
60-min	—	20-day	—
3-hr	—	30-day	—
6-hr	—	60-day	—
12-hr	—		
24-hr	—		

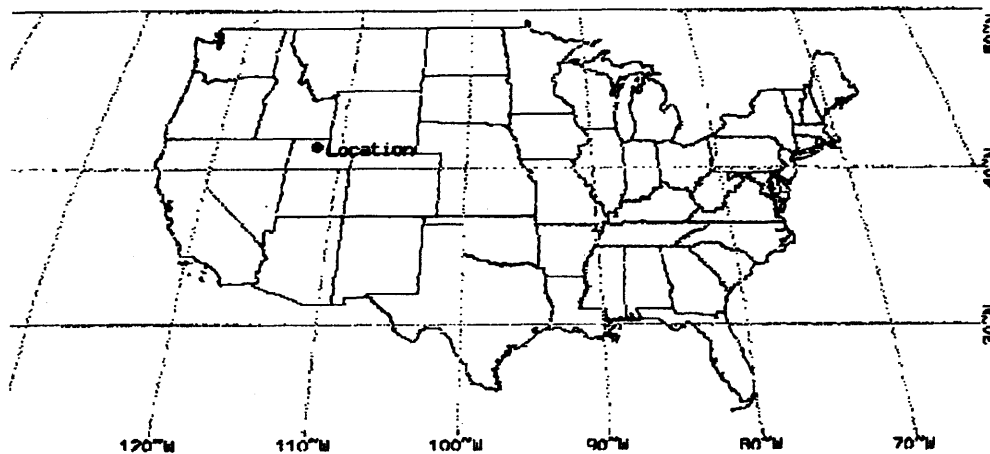
Precipitation Frequency Data Server

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5/8Partial duration based Point Precipitation Frequency Estimates - Version: 4
41.343 N 112.024 W 4678 ft

Thu Apr 10 17:29:16 2008

Average Recurrence Interval (years)	
1	—
2	—
5	—
10	—
25	—
100	—
200	—
500	—
1000	—

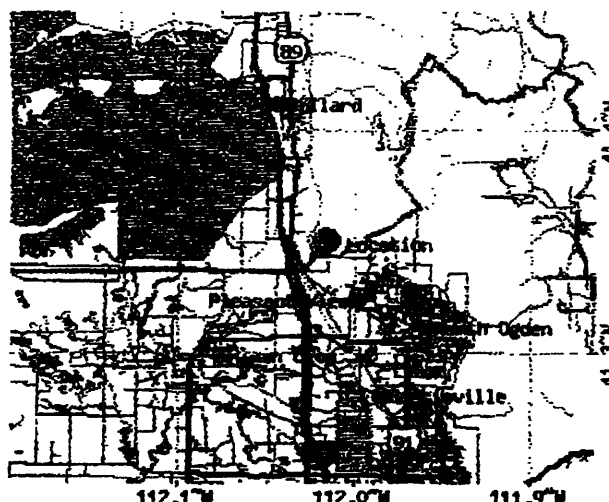
Maps -



These maps were produced using a direct map request from the
 U.S. Census Bureau Mapping and Cartographic Resources
 Tiger Map Server.

Precipitation Frequency Data Server

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Please read disclaimer for more information.

LEGEND

- State
- County
- Indian Resv
- Lake/Pond/Ocean
- Street
- Expressway
- Highway
- Connector
- Stream
- Military Area
- National Park
- Other Park
- City
- County

Scale 1:228583

Average true scale depends on monitor resolution

Other Maps/Photographs -

View USGS digital orthophoto quadrangle (DOQ) covering this location from TerraServer; USGS Aerial Photograph may also be available from this site. A DOQ is a computer-generated image of an aerial photograph in which image displacement caused by terrain relief and camera tilts has been removed. It combines the image characteristics of a photograph with the geometric qualities of a map. Visit the USGS for more information.

Watershed/Stream Flow Information -

Find the Watershed for this location using the U.S. Environmental Protection Agency's site.

Climate Data Sources -

Precipitation frequency results are based on data from a variety of sources, but largely NCDC. The following links provide general information about observing sites in the area, regardless of if their data was used in this study. For detailed information about the stations used in this study, please refer to our documentation.

Using the National Climatic Data Center's (NCDC) station search engine, locate other climate stations within:

...OR... of this location (41.343/-112.024). Digital ASCII data can be obtained directly from NCDC.

Find Natural Resources Conservation Service (NRCS) SNOTEL (SNOWpack TELelemetry) stations by visiting the Western Regional Climate Center's state-specific SNOTEL station maps.

Hydroclimatology Design Studies Center
 DOW/NOAA/National Weather Service
 1325 East-West Highway
 Silver Spring, MD 20910

(301) 713-1649

Questions?: HDSC.Questions@noaa.gov

Disclaimer

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Chapter 2

Estimating Runoff

Technical Release 56
Urban Hydrology for Small WatershedsTable 2-2b Runoff curve numbers for cultivated agricultural lands ¹

Cover description			Curve numbers for hydrologic soil group			
Cover type	Treatment ²	Hydrologic condition ³	A	B	C	D
Fallow	Bare soil	—	77	86	91	94
	Crop residue cover (CR)	Poor	76	86	90	93
		Good	74	83	88	90
Row crops	Straight row (SR)	Poor	72	81	88	91
		Good	67	78	85	89
	SR + CR	Poor	71	80	87	90
		Good	64	75	82	86
	Contoured (C)	Poor	70	79	84	88
		Good	65	75	82	86
	C + CR	Poor	69	78	83	87
		Good	64	74	81	85
	Contoured & terraced (C&T)	Poor	66	74	80	82
		Good	62	71	78	81
Small grain	SR	Poor	65	76	84	88
		Good	63	75	83	87
	SR + CR	Poor	64	75	83	86
		Good	60	72	80	84
	C	Poor	63	74	82	85
		Good	61	73	81	84
	C + CR	Poor	62	73	81	84
		Good	60	72	80	83
	C&T	Poor	61	72	79	82
		Good	59	70	78	81
Close-seeded or broadcast legumes or rotation meadow	SR	Poor	66	77	85	89
		Good	58	72	81	85
	C	Poor	64	75	83	86
		Good	55	69	78	83
	C&T	Poor	63	73	80	83
		Good	51	67	76	80

¹ Average runoff condition, and $I_a=0.2s$ ² Crop residue cover applies only if residue is on at least 5% of the surface throughout the year.³ Hydraulic condition is based on combination factors that affect infiltration and runoff, including (a) density and canopy of vegetative areas, (b) amount of year-round cover, (c) amount of grass or close-seeded legumes, (d) percent of residue cover on the land surface (good = 20%), and (e) degree of surface roughness.

Poor: Factors impair infiltration and tend to increase runoff.

Good: Factors encourage average and better than average infiltration and tend to decrease runoff.

8/8

Chapter 2

Estimating Runoff

Technical Release 55
Urban Hydrology for Small WatershedsTable 2-2d Runoff curve numbers for arid and semiarid rangelands ¹

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition ²	A ³	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	86
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

¹ Average runoff condition, and $I_p = 0.25$. For range in humid regions, use table 2-2c.² Poor: <30% ground cover (litter, grass, and brush overstory).

Fair: 30 to 70% ground cover.

Good: > 70% ground cover.

³ Curve numbers for group A have been developed only for desert shrub.

STORMWATER REPORTING FORMS

STORM WATER DISCHARGE MONITORING REPORT (SWDMR)
(For additional forms copy this form or contact the DWQ)**IDENTIFICATION & LOCATION**

Name _____ Permit No. UTR _____

Mailing Address: _____

Location (if different) _____

Monitoring Period:

From: Month _____ Day _____ Year _____ To: Month _____ Day _____ Year _____

Total Storm Water Discharge Points _____ Number assigned to this Discharge Point _____

INDUSTRY SECTOR(S)

Industrial Activities or Industry Sector(s) Drained by this Discharge:

- | | |
|---|---|
| <input type="checkbox"/> A. Timber Products Facilities | <input type="checkbox"/> R. Ship or Boat Building and Repair Yards. |
| <input type="checkbox"/> B. Paper and Allied Products Manufacturing Facilities. | <input type="checkbox"/> S. Vehicle Maintenance Areas, Equipment Cleaning Areas or Airport Deicing Operations located at Air Transportation Facilities. |
| <input type="checkbox"/> C. Chemical and Allied Products Manufacturing Facilities. | <input type="checkbox"/> T. Wastewater Treatment Works. |
| <input type="checkbox"/> D. Asphalt Paving, Roofing Materials, and Lubricant Manufacturing Facilities. | <input type="checkbox"/> U. Food and Kindred Products Facilities. |
| <input type="checkbox"/> E. Glass, Clay, Cement, Concrete, and Gypsum Product Manufacturing Facilities. | <input type="checkbox"/> V. Textile Mills, Apparel and other Fabric Product Manufacturing Facilities. |
| <input type="checkbox"/> F. Primary Metals Facilities. | <input type="checkbox"/> W. Furniture and Fixture Manufacturing Facilities. |
| <input type="checkbox"/> G. Metal Mines (Ore Mining and Dressing). | <input type="checkbox"/> X. Printing and Publishing Facilities. |
| <input type="checkbox"/> H. Coal Mines and Coal Mine-Related Facilities. | <input type="checkbox"/> Y. Rubber and Miscellaneous Plastic Product Manufacturing Facilities. |
| <input type="checkbox"/> I. Oil or Gas Extraction Facilities. | <input type="checkbox"/> Z. Leather Tanning and Finishing Facilities. |
| <input type="checkbox"/> J. Mineral Mining and Processing Facilities. | <input type="checkbox"/> AA. Facilities That Manufacture Metal Products including Jewelry, Silverware and Plated Ware. |
| <input type="checkbox"/> K. Hazardous Waste Treatment Storage or Disposal Facilities. | <input type="checkbox"/> AB. Facilities That Manufacture Transportation Equipment, Industrial or Commercial Machinery. |
| <input type="checkbox"/> L. Landfills and Land Application Sites. | <input type="checkbox"/> AC. Facilities That Manufacture Electronic and Electrical Equipment and Components, Photographic and Optical Goods. |
| <input type="checkbox"/> M. Automobile Salvage Yards. | <input type="checkbox"/> AD. Non-Classified Facilities. |
| <input type="checkbox"/> N. Scrap Recycling and Waste Recycling Facilities. | |
| <input type="checkbox"/> O. Steam Electric Power Generating Facilities. | |
| <input type="checkbox"/> P. Motor Freight Transportation Facilities, Passenger Transportation Facilities, Petroleum Bulk Oil Stations and Terminals, the United States Postal Service, or Railroad Transportation Facilities. | |
| <input type="checkbox"/> Q. Vehicle Maintenance Areas and Equipment | |

SIGNATURE

Name/Title Principle Executive Officer
(Typed or Printed)

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations. See 18 U.S.C. 1001 and 33 U.S.C. 1319. (penalties under these statutes may include fines up to \$10,000 and/or maximum imprisonment of between 6 months and 5 years.)

**Signature of Principle Executive
Officer or Authorized Agent**

Date _____

Comments:

INFORMATION

Adverse Weather Waiver. When a discharger is unable to collect samples within a specified sampling period due to adverse climatic conditions, the discharger shall collect a substitute sample from a separate qualifying event in the next period and submit the data along with data for the routine sample in that period. Adverse weather conditions that may prohibit the collection of samples include weather conditions that create dangerous conditions for personnel (such as local flooding, high winds, hurricanes, tornadoes, electrical storms, etc.) or otherwise make the collection of a sample impracticable (drought, extended frozen conditions, etc.).

Exemption to Monitoring Requirements. (Does not apply to sector S or any Visual Monitoring Requirements.) As an alternative to monitoring an outfall, an annual certification may be made that material handling equipment or activities; raw or waste materials; intermediate, final, or by-products; industrial machinery or operations; and significant materials from past industrial activity that are located in areas of the facility within the drainage area of the outfall are not presently exposed to storm water and will not be exposed to storm water for the certification period. Such certification must be retained in the storm water pollution prevention plan, and submitted to the DWQ in accordance with Part V.B of the permit. In the case of certifying that a pollutant is not present, the permittee must submit the certification along with the monitoring reports required under reporting requirements in the sector. If the permittee cannot certify for an entire period, they must submit the date exposure was eliminated and any monitoring required up until that date. This certification option is not applicable to compliance monitoring requirements associated with effluent limitations.

When to Monitor and Report. Samples must be collected and analyzed at least once during each three month monitoring period. Monitoring results must be submitted annually. See Reporting for dates.

More Frequent Monitoring. If sampling is conducted more frequently than semi-annually, all sampling results must be submitted. A separate SWDMR is

required for each storm event sampled.

How to Report. A separate SWDMR form is required for each storm event and for each outfall sampled. SWDMRs must be signed and mailed to the Division of Water Quality, and must be postmarked by the date specified under Monitoring Periods and Reporting Deadlines. The permittee should retain a copy. The address and phone number for questions or to mail the SWDMR is:

Department of Environmental Quality
Division of Water Quality
Attention Storm Water Coordinator
PO Box 144870
Salt Lake City, UT 84114-4870

(801) 538-6146

Substantially Identical Discharges. If there is reason to believe that the discharges from two or more outfalls are substantially identical, one of the outfalls may be monitored and that data submitted for all substantially identical outfalls. A description of the location of the outfalls, an explanation of why the outfalls have substantially identical discharges, and the size of the drainage area and runoff coefficient must be submitted as an attachment to the SWDMR.

VISUAL MONITORING REQUIREMENTS

Sample and Data Collection:

Examinations shall be made of samples collected within the first 30 minutes (or as soon thereafter as practical, but not to exceed one hour) of when the runoff or snowmelt begins discharging. The examinations shall document observations of color, odor, clarity, floating solids, settled solids, suspended solids, foam, oil sheen, and other obvious indicators of storm water pollution. The examination must be conducted in a well lit area. No analytical tests are required to be performed on the samples. All such samples shall be collected from the discharge resulting from a storm event that is greater than 0.1 inches in magnitude and that occurs at least 72 hours from the previously measurable (greater than 0.1 inch rainfall) storm event. Where practicable the same individual will carry out the collection and examination of discharges for the life of the permit.

1. Identification of Color:

Black Dark Grey Medium Grey Light Grey Dark Chocolate Brown Medium Brown
 Light Brown Tan Yellow Green Other _____

2. Intensity of Color: Very intense Prominent Moderately Perceptible Hardly Perceptible

Comments: _____

Totally Opaque Slightly Translucent Translucent Nearly Transparent Transparent

Diesel Gasoline Petroleum Solvent Musty Sewage Chlorine
 Rotten Egg Sulfur No Odor Noxious Other _____

Comments: _____

APPENDIX C – SOIL SAMPLES

Mindy Wheeler
4203 Sunrise Dr.
Park City, UT 84098

Samples Received: 7/21/08

USU ID	Identification	pH	EC dS/m	Phosphorus mg/kg	Potassium	Total Nitrogen %	Texture	Organic Matter %
4553	M.R. Prod 1	7.86	1.0	1.4	71	0.03	Sandy Loam	0.5
4554	M.R. Prod 2	7.75	2.04	1.3	48	0.02	Sandy Loam	0.4
4555	M.R. Prod 3	7.93	0.35	1.7	66	<0.01	Sandy Loam	0.4
4556	M.R. Prod 4	7.62	0.35	8.4	115	0.04	Sandy Loam	1.0
4557	M.R. Prod 5	7.89	0.3	4.3	123	<0.01	Sandy Loam	0.7
4558	M.R. Prod 6	7.80	0.4	1.3	62	0.01	Sandy Loam	0.3

Soil Samples- The number at the end of each row in the identification column coincides with the number on the map on the following page.



Soil Sampling Points

WP Natural Resource Consulting, Inc.
PO Box 520604
SLC, UT 84152
(801) 699-5459

**APPENDIX D – AIR QUALITY
PERMIT**

DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY

Michael O. Leavitt
Governor
Dianne R. Nielson, Ph.D.
Executive Director
Richard W. Sprott
Director

150 North 1950 West
P.O. Box 144820
Salt Lake City, Utah 84114-4820
(801) 536-4000 Voice
(801) 536-4099 Fax
(801) 536-4414 T.D.D.
Web: www.deq.state.ut.us

DAQE-105-02

February 14, 2002

Paul Glauser
Jack B. Parson Company
P.O. Box 3429
Ogden, Utah 84409

Dear Mr. Glauser:

Re: Approval Order for Rocky Point Aggregate Processing Plant
Weber County, CDS-B, NSPS, Title V
Project Code: N2323-001

The attached document is an Approval Order for the above-referenced project.

Future correspondence on this Approval Order should include the engineer's name as well as the DAQE number as shown on the upper right-hand corner of this letter. Please direct any technical questions you may have on this project to Mr. Jon Black. He may be reached at (801) 536-4047.

Sincerely,

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

RWS:JB:re

cc: Weber-Morgan Health Department
Mike Owens, EPA Region VIII

Randy Marriott
Rocky Point Aggregate Processing Plant
4250 N 1700 W.
Pleasant View, UT 84414

STATE OF UTAH

Department of Environmental Quality

Division of Air Quality

APPROVAL ORDER: ROCKY POINT AGGREGATE PROCESSING PLANT

**Prepared By: Jon L. Black, Engineer
Email: jblack@deq.state.ut.us
Phone: (801) 536-4047, SLC Office
(801) 371-1106, Provo Office**

APPROVAL NUMBER

DAQE-105-02

Date: February 14, 2002

Jack B. Parson Company

**Source Contact
Paul Glauser
(801) 409-2494**

**Richard W. Sprott
Executive Secretary
Utah Air Quality Board**

Abstract

Randy Marriott has submitted a Notice of Intent (NOI) for a sand and gravel crushing operation at the Rocky Point Pit. The operation will use one jaw crusher, three cone crushers, three triple deck screens, one 1200 H.P. diesel generator, and various support equipment. The operation is located in Pleasant View, Utah, and considered to impact both Weber and Box Elder counties. Both counties are in attainment for all criteria pollutants. New Source Performance Standards (NSPS) Subpart OOO - Standards of Performance for Nonmetallic Mineral Processing Plants regulations and Title V regulations apply to this source. National Emission Standards for Hazardous Air Pollutants (NESHAP) and Maximum Available Control Technology (MACT) regulations do not apply to this source. The emissions in tons per year (tpy) from this operation will be: PM_{10} , 4.92 tpy, NO_x , 16.76 tpy, SO_2 , 2.65 tpy, CO, 4.02 tpy, VOC, 0.70 tpy, HAPs, 0.05 tpy.

The project has been evaluated and found to be consistent with the requirements of the Utah Administrative Code Rule 307 (UAC R307). A 30-day public comment period was held in accordance with UAC R307-401-4 and no comments were received. This air quality Approval Order (AO) authorizes the project with the following conditions, and failure to comply with any of the conditions may constitute a violation of this order.

General Conditions:

1. This Approval Order (AO) applies to the following company:

Site Office

Rocky Point Pit
4250 North 1700 West
Pleasant View, Utah 84414
Phone Number NA
Fax Number NA

Corporate Office Location

Marriott Construction
4960 West 2200 North
Ogden, Utah 84404
Phone Number (801) 731-7252
Fax Number (801) 731-1008

The equipment listed in this AO shall be operated at the following location:

PLANT LOCATION:

4250 North 1700 West, Pleasant View, Utah 84414
Weber and Box Elder Counties

UNIVERSAL TRANSVERSE MERCATOR (UTM) COORDINATE SYSTEM:

4,577.4 km. Northing, 414.8 km. Easting, Zone 12, UTM Datum NAD 27

2. Definitions of terms, abbreviations, and references used in this AO conform to those used in the Utah Administrative Code Rule 307 (UAC R307), and Series 40 of the Code of Federal Regulations (40 CFR). These definitions take precedence, unless specifically defined otherwise herein.
3. The limits set forth in this AO shall not be exceeded without prior approval in accordance with R307-401.

4. Modifications to the equipment or processes approved by this AO that could affect the emissions covered by this AO must be approved in accordance with R307-401-1.
5. All records referenced in this AO or in applicable NSPS standards, which are required to be kept by the owner/operator, shall be made available to the Executive Secretary or Executive Secretary's representative upon request, and the records shall include the two-year period prior to the date of the request. Records shall be kept for the following minimum periods:
 - A. Emission inventories Five years from the due date of each emission statement or until the next inventory is due, whichever is longer.
 - B. All other records Two years.
6. Randy Marriott shall install and operate the equipment at Rocky Point Pit in accordance with the terms and conditions of this AO, which was written pursuant to the NOI submitted to the Division of Air Quality (DAQ) on December 7, 1999 and additional information submitted to the Executive Secretary dated May 4, 2000, July 3, 2001 and November 1, 2001.
7. The approved installation shall consist of the following equipment or equivalent, where the Executive Secretary shall determine equivalency:
 - A. One (1) Jaw Crusher, 500 ton/hr
 - B. Three (3) Cone Crusher, 500 ton/hr
 - C. Three (3) Triple Deck Screens, 500 ton/hr
 - D. One (1) 1200 Horsepower Diesel Generator
 - E. Twelve (12) Conveyors
 - F. Four (4) Stackers
 - G. Various support equipment, such as stockpiles, bins, sand screw, water pumps, water trucks, etc.
8. Randy Marriott shall notify the Executive Secretary in writing when the installation of the equipment listed in Condition #7 has been completed and is operational, as an initial compliance inspection is required. To insure proper credit when notifying the Executive Secretary, send your correspondence to the Executive Secretary, attn: Compliance Section.

If installation has not been completed within eighteen months from the date of this AO, the Executive Secretary shall be notified in writing on the status of the installation. At that time, the Executive Secretary shall require documentation of the continuous installation of the operation and may revoke the AO in accordance with R307-401-11.

Limitations and Tests Procedures

9. Visible emissions from the following emission points shall not exceed the following values:
 - A. All crushers - 15% opacity
 - B. All screens - 10% opacity
 - C. All conveyor transfer points - 10% opacity
 - D. All diesel engines - 20% opacity

- E. Conveyor drop points - 20% opacity
- F. Storage Piles - 10% opacity
- G. All other points - 20% opacity

Opacity observations of emissions from stationary sources shall be conducted according to 40 CFR 60, Appendix A, Method 9.

For sources that are subject to NSPS, opacity shall be determined by conducting observations in accordance with 40 CFR 60.11(b) and 40 CFR 60, Appendix A, Method 9.

10. Visible fugitive dust emissions from haul-road traffic and mobile equipment in operational areas shall not exceed 20% opacity. Visible emissions determinations for traffic sources shall use procedures similar to Method 9. The normal requirement for observations to be made at 15 second intervals over a six minute period, however, shall not apply. Six points, distributed along the length of the haul road or in the operational area, shall be chosen by the Executive Secretary or the Executive Secretary's representative. An opacity reading shall be made at each point when a vehicle passes the selected points. Opacity readings shall be made $\frac{1}{2}$ vehicle length or greater behind the vehicle and at approximately $\frac{1}{2}$ the height of the vehicle or greater. The accumulated six readings shall be averaged for the compliance value.
11. The following production limits shall not be exceeded:
 - A. 500,000 tons of material produced per rolling 12-month period
 - B. 500 tons of material produced per hour based on a 24-hour average
 - C. 17 hours of operation per day

To determine compliance with a rolling 12-month total the owner/operator shall calculate a new 12-month total by the twentieth day of each month using data from the previous 12 months. Records of production shall be kept for all periods when the plant is in operation. Production shall be determined by operators logs, truck scale records or vendor receipts. The records of production shall be kept on a daily basis. Hours of operation shall be determined by supervisor monitoring and maintaining of an operations log.

Roads and Fugitive Dust

12. Randy Marriott shall abide by a fugitive dust control plan acceptable to the Executive Secretary for control of all dust sources associated with the Rocky Point Pit. Randy Marriott shall submit a fugitive dust control plan to the Executive Secretary, attention: Compliance Section, for approval within 30 days of the date of this AO. This plan shall contain sufficient controls to prevent an increase in PM_{10} emissions above those modeled for this AO. The limitations and conditions in the fugitive dust control plan shall not be changed.

The haul road length, speed or any other parameter used to calculate emissions shall not be increased above the limits established in the fugitive dust control plan. The haul road speed shall be posted.

13. All unpaved roads and other unpaved operational areas that are used by mobile equipment shall be water sprayed and/or chemically treated to control fugitive dust. Treatment shall be of sufficient frequency and quantity to maintain the surface material in a damp/moist condition or unless it is below freezing. The opacity shall not exceed 20% during all times the areas are in use. If chemical treatment is to be used, the plan must be approved by the Executive Secretary. Records of water and/or chemical treatment shall be kept for all periods when the plant is in operation. The records shall include the following items:

- A. Date
- B. Number of treatments made, dilution ratio, and quantity
- C. Rainfall received, if any, and approximate amount
- D. Time of day treatments were made

14. The haul road limitations shall be:

- A. Haul road length of 0.11 miles
- B. Speed limit of 10 miles per hour

The haul road speed shall be posted, at a minimum, on site at the beginning of the haul road so that it is clearly visible from the haul road.

15. Control of disturbed areas and storage piles are required at all times (24 hours per day every day) for the duration of the project/operation until the area is reclaimed.
16. Water sprays or chemical dust suppression sprays shall be installed at the following points to control fugitive emissions:

- A. All crushers
- B. All screens
- C. All conveyor transfer points

The sprays shall operate whenever dry conditions warrant or as determined necessary by the Executive Secretary.

Fuels

17. The owner/operator shall use #1 or #2 diesel fuel as a primary fuel in diesel engines.
18. The sulfur content of any fuel oil or diesel burned shall not exceed 0.5 percent by weight for diesel fuels consumed in all other equipment. The sulfur content shall be determined by ASTM Method D-4294-89 or approved equivalent. Certification of fuels shall be either by Randy Marriott's own testing or test reports from the fuel marketer.

Federal Limitations and Requirements

19. In addition to the requirements of this AO, all applicable provisions of 40 CFR 60, New Source Performance Standards (NSPS) Subpart A, and OOO, 40 CFR 60.1 to 60.18 and 40 CFR 60.670 to 60.676 (Standards of Performance for Nonmetallic Mineral Processing Plants) apply to this site.

Records & Miscellaneous

20. At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any equipment approved under this Approval Order including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Executive Secretary which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source. All maintenance performed on equipment authorized by this AO shall be recorded, and the records shall be maintained for a period of two years.
21. The owner/operator shall comply with R307-150 Series. Inventories, Testing and Monitoring.
22. The owner/operator shall comply with R307-107. General Requirements: Unavoidable Breakdowns.

The Executive Secretary shall be notified in writing if the company is sold or changes its name.

This AO in no way releases the owner or operator from any liability for compliance with all other applicable federal, state, and local regulations including R307.

A copy of the rules, regulations and/or attachments addressed in this AO may be obtained by contacting the Division of Air Quality. The Utah Administrative Code R307 rules used by DAQ, the Notice of Intent (NOI) guide, and other air quality documents and forms may also be obtained on the Internet at the following web site:

http://www.eq.state.ut.us/eqair/aq_home.htm

The Potential To Emit (PTE) emissions for the entire plant are currently calculated at the following values:

	<u>Pollutant</u>	<u>Tons/yr</u>
A.	PM ₁₀	4.92
B.	SO ₂	2.65
C.	NO _x	16.76
D.	CO	4.02
E.	VOC	0.70
F.	HAPs (Aldehydes).....	0.05

Approved By:

Richard W. Sprott, Executive Secretary
Utah Air Quality Board

Appendix E-
Calculation of Reclamation Costs

Reclamation Cost Estimate
Rocky Point Gravel Pit Project
Phase One

Table of Contents

Reclamation cost Summary

- 2 Earthmoving costs, Other costs, Supervision, Escalation

Earthwork Tasks

- 3 **Phase One Area Growth Media Requirements.**
- 4 980 Loader, 345 hp, time estimate for loading fines / growth media from stockpiles into trucks for hauling to 32 acre Phase One Area.
- 5 Caterpillar 735 Articulated Dump Trucks Hauling Estimate for hauling growth media from fines piles to Phase One area
- 6 Caterpillar 14H Motor Grader, 220 hp, 14 ft. wide blade, Spreading and ripping of growth media for spreading growth media over 32 acres of Phase One area
- 7 980 Loader, 345 hp, time estimate for loading fines / growth media for 1 acre, Phase One, Lower Bench.
- 8 Caterpillar 735 Articulated Dump Truck Hauling Estimate for hauling growth media from fines piles to 1 acre, Phase One, Lower Bench
- 9 Caterpillar 14H Motor Grader, 220 hp, 14 ft. wide blade, Spreading and ripping of growth media for spreading growth media over 1 acre, Phase One, lower bench
- 10 980 Loader, 345 hp, time estimate for loading fines / growth media for 0.5 acre, Phase One, upper bench
- 11 Caterpillar 735 Articulated Dump Truck Hauling Estimate for hauling growth media from fines piles for 0.5 acre, Phase One, upper bench
- 12 Caterpillar 14H Motor Grader, 220 hp, 14 ft. wide blade, Spreading and ripping of growth media for spreading growth media over 0.5 acre, Phase One, upper bench
- 13 Ripping 1,700 feet of road for seed bed preparation. D6N dozer, 150 hp, Ripping 1,700 feet of road, 20' wide, 7' rippers
- 14 **Cost References**

Reclamation Cost Summary

Reclamation Cost Estimate, page 2

refer to page
below for details
of earthmoving
time estimate

Reference
note (see
page 14)

	Earthwork task	Time (hrs)	Cost per hour	no of units	Cost
4	980 Loader time estimate for Loading 51,627 CY of growth media over Phase One 32 acre area.	161	\$186	1	\$29,922
5	25 CY Articulated Dump Truck time estimate for spreading 51,627 CY of growth media over Phase One 32 acre area.	142	\$136	2	\$58,000
6	Grader time estimate for grading and ripping 51,627 CY of growth media over Phase One 32 acre area.	29	\$137	3	\$3,973
7	980 Loader time estimate for Loading 1,613 CY of growth media over Phase One, 1 acre, Lower bench.	5	\$186	1	\$930
8	25 CY Articulated Dump Truck time estimate for spreading 1,613 CY of growth media over Phase One, 1 acre, lower bench.	2	\$136	2	\$816
9	Grader time estimate for grading and ripping 1,613 CY of growth media over Phase One 1 acre, lower bench.	1	\$137	3	\$137
10	980 Loader time estimate for Loading 807 CY of growth media over Phase One, 0.5 acre, upper bench.	3	\$186	1	\$558
11	25 CY Articulated Dump Truck time estimate for spreading 807 CY of growth media over Phase One, 0.5 acre, upper bench.	2	\$136	2	\$816
12	Grader time estimate for grading and ripping 807 CY of growth media over Phase, 0.5 acre, upper bench.	0.4	\$137	3	\$55
13	D6N dozer, 150 hp, Ripping 1,700 feet of road, 20' wide, with D8R Dozer, 7' ripper spacing, 3 rippers.	27	\$134	7	\$3,614
Total Earthwork Costs					\$98,821

Other expenses

Reference Note Page 14

3 week rental of Water Truck	5	\$6,870
General site clean up and removal of trash and debris		\$2,000
Water truck for dust control, 3 wk operating costs, 8 hr./day	5	\$7,632
Cost of composted manure incl. delivery. 330 ton @ 35 ton/truck, 9 truck loads		\$2,000
Spreading of Composted Manure on 35.5 acres of Phase One area. @ \$3.73/Thousand ft ²	35.5 acres	\$5,768
seeding of Phase One area @ \$245/acre	35.5 acres	\$8,698
Seeding of 76 acres upper Phase 2 area (area marked Previously Impacted in Phase B area shown on Base Map) @ \$245/acre	76 acres	\$18,620
Equipment mobilization. 1 Loader, 3 dump trucks, 1 water truck, 1 grader (6x\$355), 1 D6 Dozer	4	\$2,485
Equipment demobilization (6x\$355)		\$2,485
Subtotal Other Expenses		\$58,557
Subtotal Earthmoving and Other Expenses		\$155,378
Project Management		
Supervision of reclamation (10% of total reclamation costs)		\$15,538
Annual Inspection of project until bond release 5 yrs @ \$300/yr.		\$1,500
Subtotal Project Management		\$17,038
Contingency (10% of total subtotal above).		\$1,704
Subtotal (Earthmoving + Other + Supervision + Contingency)		\$18,742
		\$174,120

5 year Escalation

year	total project cost	annual escalation %	escalation
2009	\$174,120	3.8%	\$6,617
2010	\$180,736	3.8%	\$6,868
2011	\$187,604	3.8%	\$7,129
2012	\$194,733	3.8%	\$7,400
2013	\$202,133	3.8%	\$7,681

\$35,694

Total Reclamation Cost Estimate:

\$209,814

Growth Media Material Requirements:

Reclamation Cost Estimate, page 3

Phase 1 Fines Pile (North Pile)
see Reclamation Treatments Map

$$\begin{array}{rclclcl} 0.7 & \text{acres @} & 15 \text{ feet high} & & & & \\ 0.7 & \text{acres X} & 43,560 \text{ ft}^2/\text{acre} & \times & 15 \text{ ft. High} = & 457,380 \text{ ft}^3 & \\ & & & & \text{..... / 27 CF/CY} = & 16,940 \text{ CY} & \end{array}$$

Phase 1 Fines Pile (South Pile)
see Reclamation Treatments Map

$$\begin{array}{rclclcl} 0.3 & \text{acres @} & 15 \text{ feet high} & & & & \\ 0.3 & \text{acres X} & 43,560 \text{ ft}^2/\text{acre} & \times & 15 \text{ ft. High} = & 196,020 \text{ ft}^3 & \\ & & & & \text{..... / 27 CF/CY} = & 7,260 \text{ CY} & \end{array}$$

Phase 1 Fines Pile (west of North Pile)
see Reclamation Treatments Map

$$\begin{array}{rclclcl} 1 & \text{acres @} & 15 \text{ feet high} & & & & \\ 1 & \text{acres X} & 43,560 \text{ ft}^2/\text{acre} & \times & 15 \text{ ft. High} = & 653,400 \text{ ft}^3 & \\ & & & & \text{..... / 27 CF/CY} = & 24,200 \text{ CY} & \end{array}$$

Total Spreadable Fines/Growth Medium Material

48,400 CY

Required volume of fines/ growth medium
material to be spread over 32 acre Phase One
area.

$$\begin{array}{rclclcl} 32 \text{ acres @} & 12 \text{ inches thick} & & & & & \\ \text{..... X} & 43,560 \text{ ft}^2/\text{acre} & = & 1,393,920 \text{ ft}^2 & & & \\ 1,393,920 \text{ ft}^2 & \times & 1.00 \text{ ft.} & = & 1,393,920 \text{ ft}^3 & & \\ 1,393,920 \text{ ft}^3 & \times & 1 \text{ CY / 27ft}^3 & = & 51,627 \text{ CY} & & \end{array}$$

Required volume of fines/ growth medium
material to be spread over 1 acre lower bench of
Phase One area.

$$\begin{array}{rclclcl} 1 \text{ acres @} & 12 \text{ inches thick} & & & & & \\ 1 \text{ acres X} & 43,560 \text{ ft}^2/\text{acre} & = & 43,560 \text{ ft}^2 & & & \\ 43,560 \text{ ft}^2 & \times & 1.00 \text{ ft.} & = & 43,560 \text{ ft}^3 & & \\ 43,560 \text{ ft}^3 & \times & 1 \text{ CY / 27ft}^3 & = & 1,613 \text{ CY} & & \end{array}$$

Required volume of fines/ growth medium
material to be spread over 0.5 acres upper
bench of phase one area

$$\begin{array}{rclclcl} 0.5 \text{ acres @} & 12 \text{ inches thick} & & & & & \\ 0.5 \text{ acres X} & 43,560 \text{ ft}^2/\text{acre} & = & 21,780 \text{ ft}^2 & & & \\ 21,780 \text{ ft}^2 & \times & 1.00 \text{ ft.} & = & 21,780 \text{ ft}^3 & & \\ 21,780 \text{ ft}^3 & \times & 1 \text{ CY / 27ft}^3 & = & 807 \text{ CY} & & \end{array}$$

Total Required Growth Media Material for Phase One

54,047 CY

Required volume of composted manure to be
mixed and spread into growth medium material @
10/ton
acre, for 35.5 acres of Phase One area.

$$\begin{array}{rclclcl} 35.5 \text{ acres @} & 10 \text{ ton/acre} & = & 355 \text{ tons} & & & \\ \text{density @} & 0.7 \text{ tons/CY} & = & 507 \text{ CY} & & & \end{array}$$

980 Loader, 345 hp, time estimate for loading fines / growth media for 32 acre Phase One Area.

Reclamation Cost Estimate, page 4

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00 from Worksheet 8, page A-10, Handbook for Calculation of Reclamation Costs, Productivity for Loader Use.

Caterpillar 980G Loader

Cycle Time = $\frac{0.3}{\text{min}} + \frac{0.2}{\text{min}} + \frac{0.2}{\text{min}} = 0.7 \text{ min}$
 haul time loaded
 pg 12-105, Cat handbook
 see graph at right
 return time empty
 pg 12-125 Cat handbook
 see page 12-106 Cat handbook for a 7.5 CY bucket 750 CY/hr
 100 cycles/hr. + additional estimated time to load material.

Net Bucket Capacity = $7.5 \text{ LCY} \times 1 = 7.5 \text{ LCY}$
 heaped bucket capacity
 page 12-52, Cat
 Handbook. Rated bucket
 cap 7.5, struck 6.44
 dirt mixtures
 bucket fill factor
 see page 12-79, Cat handbook.
 100 - 120% for rock

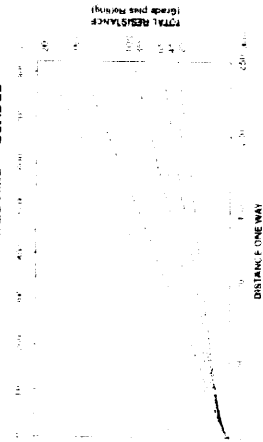
Hourly Production = $\frac{7.5 \text{ LCY}}{\text{net bucket capacity}} \times \frac{0.5}{\text{efficiency factor}} \times \frac{60 \text{ min/hr}}{0.2} = 321 \text{ LCY/hr}$
 cycle time
 see page 18, Surface mining handbook

Hours Required = $\frac{51,627}{\text{volume to be moved}} = 161 \text{ hrs.}$
 hourly production
 321 LCY/hr

Travel Time - Loaded
 • 980G/980G Series II
 • 29.5R25 Tires

Wheel Loaders
 Integrated Toolcarriers

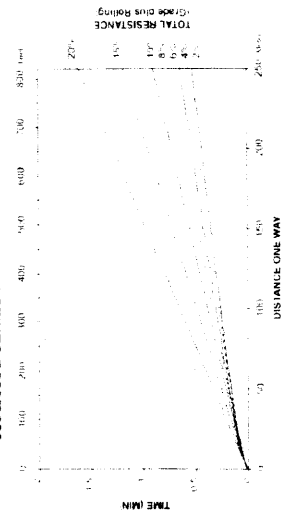
980G/980G SERIES II TRAVEL TIME -- LOADED



Travel Time -- Empty
 • 980G/980G Series II
 • 29.5R25 Tires

Wheel Loaders
 Integrated Toolcarriers

980G/980G SERIES II TRAVEL TIME -- EMPTY



Caterpillar 735 Articulated Dump Truck Hauling Estimate
For hauling growth media from piles to Phase One area

from Worksheet 9, page A-11, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Truck Use, this sheet based on and References: Calculator Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

Caterpillar 769C Dump Truck

$$\begin{array}{rcl} \text{Truck Capacity} & \frac{\boxed{25.8} \text{ Loose Cubic Yards, LCY}}{\boxed{7.5} \text{ LCY}} & = \boxed{3} \text{ passes (rounded to nearest whole number)} \end{array}$$

Net Truck Capacity = LCY x = LCY

Loader bucket capacity for 980G loader

Loader passes per truck

Loading Time/Truck = $\frac{0.7 \text{ minutes}}{3} \times 2.41 \text{ minutes}$
 Loader cycle time (see 980 G loader loading worksheet)

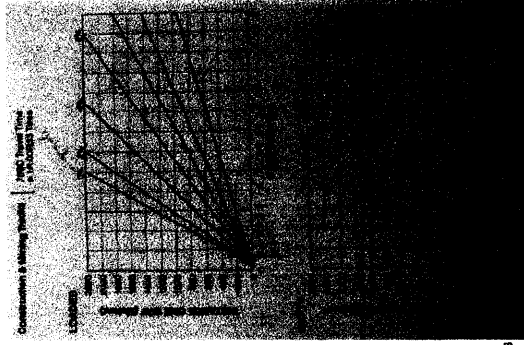
Truck Cycle Time = $\boxed{3.2}$ minutes + $\boxed{2}$ minutes + $\boxed{2.41}$ minutes + $\boxed{2}$ minutes = $\boxed{9.61}$ minutes

Haul time \swarrow return time \nwarrow dumping time \searrow loading time \swarrow dump and

$$\text{Production Rate} = \frac{\text{Net truck capacity}}{\text{no. trucks}} \times \text{LCY} \quad \text{LCY / minute}$$

$$\text{Hourly Production} = \frac{\text{Truck Cycle time}}{\text{Production Rate}} \times \text{efficiency factor}$$

$$\frac{\text{Hours Required} = \frac{\text{Volume of material to be moved}}{\text{Hourly Production}}}{\frac{51,827 \text{ LCY}}{363 \text{ LCY/hr}}} = \frac{142}{\text{hours}}$$



Caterpillar 14H Motor Grader, 220 hp, 14 ft. wide blade, Spreading and ripping of growth media for spreading growth media over 32 acres of Phase One area

from Worksheet 12, page A-16, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Motor Grader Use.
& Caterpillar website, Products and Product Specifications

Grading

$$\text{Hourly Production} = \frac{\text{average speed miles/hr} \times \text{X} \times \text{effective blade width}}{5,280 \text{ ft/mile} \times 1 \text{ acre} / 43,520 \text{ ft}^2 \times \text{efficiency factor}} = \frac{4.8 \times 8}{2.3} = 2.3 \text{ acres / hr.}$$

$$\text{Hours Required} = \frac{\text{Area to be graded}}{\text{hourly production}} = \frac{32 \text{ acres}}{2.3} = 14 \text{ hours}$$

Scarification

$$\text{Hourly Production} = \frac{\text{average speed miles/hr} \times \text{X} \times \text{Scarifier width}}{5,280 \text{ ft/mile} \times 1 \text{ acre} / 43,520 \text{ ft}^2 \times \text{efficiency factor}} = \frac{4.8 \times 8}{2.2} = 2.2 \text{ acres / hr.}$$

$$\text{Hours Required} = \frac{\text{Area to be graded}}{\text{hourly production}} = \frac{32 \text{ acres}}{2.2} = 15 \text{ hours}$$

Total Hours Required

$$\text{Grading Hrs required} + \text{Scarification hr. required} = \text{Total Hrs. Required}$$

$$14 + 15 = 29$$

980 Loader, 345 hp, time estimate for loading fines / growth media for 1 acre, Phase One, lower bench.

Reclamation Cost Estimate, page 7

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00 from Worksheet 6, page A-10, Handbook for Calculation of Reclamation Costs, Productivity for Loader Use.

Caterpillar 980G Loader

Cycle Time = $\frac{0.3 \text{ min} + 0.2 \text{ min} + 0.2 \text{ min}}{0.7 \text{ min}} = 0.7 \text{ min}$
 haul time loaded
 pg 12-105, Cat handbook
 see graph at right
 return time empty
 pg 12-125 Cat handbook
 see page 12-106 Cat handbook for a 7.5 CY bucket 750 CY/hr
 100 cycles/hr. + additional estimated
 time to load material.

Net Bucket Capacity = $7.5 \text{ LCY} \times 1 = 7.5 \text{ LCY}$
 heaped bucket capacity
 page 12-52, Cat
 Handbook. Rated bucket
 cap 7.5, struck 6.44
 dirt mixtures

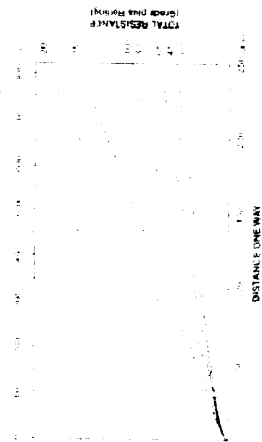
Hourly Production = $\frac{7.5 \text{ LCY}}{0.7 \text{ min}} \times 0.5 \text{ efficiency factor} \times 60 \text{ min/hr} = 321 \text{ LCY/hr}$
 net bucket capacity
 cycle time
 efficiency factor
 see page 18, Surface mining handbook

Hours Required = $\frac{1,613 \text{ volume to be moved}}{321 \text{ LCY/hr hourly production}} = 5 \text{ hrs.}$

Travel Time - Loaded
 • 980G/980G Series II
 • 29.5R25 Tires

Wheel Loaders
 Integrated Toolcarriers

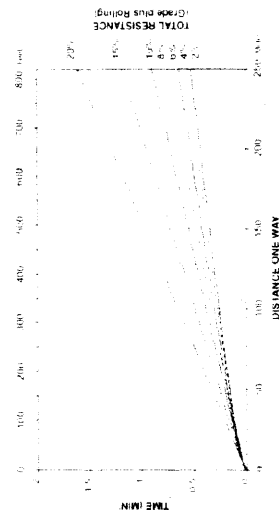
980G/980G SERIES II TRAVEL TIME - LOADED



Wheel Loaders
 Integrated Toolcarriers

Travel Time - Empty
 • 980G/980G Series II
 • 29.5R25 Tires

980G/980G SERIES II TRAVEL TIME - EMPTY



Caterpillar 735 Articulated Dump Truck Hauling Estimate For hauling growth media from piles to 0.5 acre, Phase One, upper bench

from Worksheet 8, page A-11, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Truck Use.
this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of
Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

Caterpillar 789C Dump Truck

No. Loader Passes / Truck = $\frac{\text{Truck Capacity } 25.8 \text{ Loose Cubic Yards, LCY}}{\text{Loader bucket capacity } 7.5 \text{ LCY}} = 3 \text{ passes (rounded to nearest whole number)}$

Net Truck Capacity = $7.5 \text{ LCY} \times 3 = 25.8 \text{ LCY}$
Loader bucket capacity for 980G loader

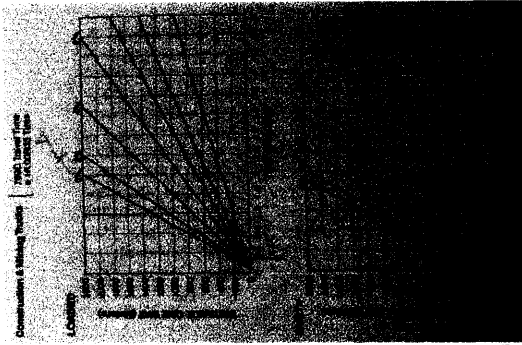
Loading Time/Truck = $0.7 \text{ minutes} \times 3 = 2.41 \text{ minutes}$
Loader cycle time (see 980 G loader loading worksheet)

Truck Cycle Time = $3.2 \text{ minutes} + 2 \text{ minutes} + 2.41 \text{ minutes} = 9.61 \text{ minutes}$
Haul time see pg. 9-14 Cat handbook, distance vs. time vs. grade graph for this truck
loading time
dump and maneuver time from Cat Handbook pg. 9-9

Production Rate = $\frac{25.8 \text{ LCY}}{9.61 \text{ minutes}} \times 3 \text{ no. trucks} = 8.06 \text{ LCY / minute}$

Hourly Production = $8.06 \text{ LCY / minute} \times 60 \text{ min/hr.} \times 0.75 = 363 \text{ LCY / hour}$
Truck Cycle time
Production Rate
efficiency factor

Hours Required = $\frac{\text{Volume of material to be moved}}{\text{Hourly Production}} = \frac{807 \text{ LCY}}{363 \text{ LCY/hr}} = 2 \text{ hours}$
page 18, Surface mining handbook



Caterpillar 14H Motor Grader, 220 hp, 14 ft. wide blade, Spreading and ripping of growth media for spreading growth media over 1 acre, Phase One, lower bench

from Worksheet 12, page A-16, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Motor Grader Use.
& Caterpillar website, Products and Product Specifications

Grading
 Hourly Production = $\frac{\text{average speed miles/hr}}{4.8} \times \frac{\text{effective blade width}}{8} \times \frac{\text{efficiency factor}}{0.5} = 2.3 \text{ acres/hr.}$

Hours Required = $\frac{\text{Area to be graded}}{1 \text{ acres}} = \frac{0.4 \text{ hours}}{2.3 \text{ hourly production}}$

Scarification
 Hourly Production = $\frac{\text{average speed miles/hr}}{4.8} \times \frac{\text{Scarifier width}}{8} \times \frac{\text{efficiency factor}}{0.5} = 2.2 \text{ acres/hr.}$

Hours Required = $\frac{\text{Area to be graded}}{1 \text{ acres}} = \frac{0.5 \text{ hours}}{2.2 \text{ hourly production}}$

Total Hours Required

Grading Hrs required $\frac{0.4}{2.3} + \frac{0.5}{2.2} = \frac{1}{1}$

Total Hrs. Required

980 Loader, 345 hp, time estimate for loading fines / growth media for 0.5 acre, Phase One, upper bench

Reclamation Cost Estimate, page 10

this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00 from Worksheet 8, page A-10, Handbook for Calculation of Reclamation Costs, Productivity for Loader Use.

Caterpillar 980G Loader

Cycle Time = $\frac{0.3}{\text{min}} + \frac{0.2}{\text{min}} + \frac{0.2}{\text{min}} + \frac{0.7}{\text{min}}$
 haul time loaded
 pg 12-105, Cat handbook
 see graph at right
 return time empty
 pg. 12-125 Cat handbook
 see page 12-105 Cat handbook for a 7.5 CY bucket 750 CY/hr
 100 cycles/hr. + additional estimated time to load material.

Net Bucket Capacity = $\frac{7.5}{\text{LCY}} \times \frac{1}{\text{LCY}} = 7.5 \text{ LCY}$

heaped bucket capacity
 page 12-52, Cat
 Handbook, Rated bucket
 cap 7.5, struck 6.44
 dirt mixtures

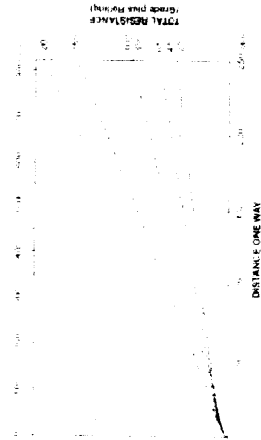
Hourly Production = $\frac{\text{net bucket capacity}}{\text{cycle time}} \times \text{efficiency factor}$
 $\frac{7.5 \text{ LCY}}{0.7 \text{ min}} \times 0.5 = 5.357 \text{ LCY/hr}$
 see page 18, Surface mining handbook

Hours Required = $\frac{\text{volume to be moved}}{\text{hourly production}}$
 $\frac{807}{321 \text{ LCY/hr}} = 2.51 \text{ hrs.}$

Travel Time - Empty
 • 980G/980G Series II
 • 29 SR25 Tires

Wheel Loaders
 Integrated Toolcarriers

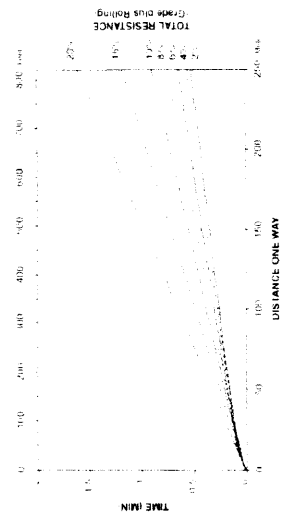
980G/980G SERIES II TRAVEL TIME --- LOADED



Travel Time --- Empty
 • 980G/980G Series II
 • 29 SR25 Tires

Wheel Loaders
 Integrated Toolcarriers

980G/980G SERIES II TRAVEL TIME --- EMPTY



Caterpillar 735 Articulated Dump Truck Hauling Estimate
For hauling growth media from piles to 0.5 acre, Phase One, upper bench

from Worksheet 9, page A-11, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Truck Use.
this sheet based on and References: Caterpillar Performance Handbook, Edition 33, & Handbook for Calculation of
Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining, 4/5/00

No. Loader Passes / Truck = $\frac{\text{Truck Capacity } 25.8 \text{ Loose Cubic Yards, LCY}}{\text{Loader bucket capacity } 7.5 \text{ LCY}} = 3 \text{ passes (rounded to nearest whole number)}$

Net Truck Capacity = $7.5 \text{ LCY} \times 3 = 25.8 \text{ LCY}$
Loader bucket capacity for 980G loader

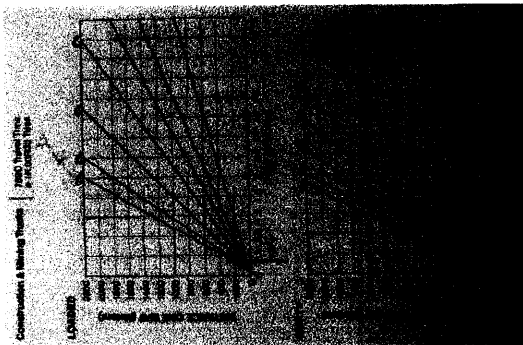
Loading Time/Truck = $0.7 \text{ minutes} \times 3 = 2.41 \text{ minutes}$
Loader cycle time (see 980 G loader loading worksheet)

Truck Cycle Time = $3.2 \text{ minutes} + 2 \text{ minutes} + 2.41 \text{ minutes} = 9.61 \text{ minutes}$
Haul time see pg. 9-14 Cat handbook, distance vs. time vs. grade graph for this truck
loading time
dump and maneuver time from Cat Handbook pg. 9-9

Production Rate = $\frac{\text{Net truck capacity } 25.8 \text{ LCY}}{\text{Truck cycle time } 9.61 \text{ minutes}} \times 60 \text{ min/hr.} = 160.3 \text{ LCY / hour}$
no. trucks

Hourly Production = $160.3 \text{ LCY / hour} \times 0.75 = 120.2 \text{ LCY / hour}$
efficiency factor

Hours Required = $\frac{\text{Volume of material to be moved } 363 \text{ LCY/hr}}{\text{Hourly Production } 120.2 \text{ LCY / hour}} = 3 \text{ hours}$



Caterpillar 14H Motor Grader, 220 hp, 14 ft. wide blade, Spreading and ripping of growth media for spreading growth media over 0.5 acres, Phase One, upper bench

from Worksheet 12, page A-16, Handbook for Calculation of Reclamation Costs, Productivity and Hours Required for Motor Grader Use.
& Caterpillar website, Products and Product Specifications

Grading

$$\text{Hourly Production} = \frac{\text{average speed miles/hr}}{4.8} \times \frac{\text{effective blade width}}{8} \times \frac{\text{efficiency factor}}{0.5} = 2.3 \text{ acres / hr.}$$

$$\text{Hours Required} = \frac{\text{Area to be graded}}{2.3 \text{ hourly production}} = 0.2 \text{ hours}$$

Scarification

$$\text{Hourly Production} = \frac{\text{average speed miles/hr}}{4.8} \times \frac{\text{Scarifier width}}{8} \times \frac{\text{efficiency factor}}{0.5} = 2.2 \text{ acres / hr.}$$

$$\text{Hours Required} = \frac{\text{Area to be graded}}{2.2 \text{ hourly production}} = 0.2 \text{ hours}$$

Total Hours Required

$$\text{Grading Hrs required} + \text{Scarification hr. required} = \text{Total Hrs. Required}$$

$$0.2 + 0.2 = 0.4$$

D6N dozer, 150 hp, Ripping 1,700 feet of road, 20' wide, with D8R Dozer, 7' ripper spacing, 3 rippers.

Volume of material to be ripped: 3000 ft x 6 x 20 ft wide
 average cut length: 3000 ft / 6 road segments =
 Square foot area: 3000 ft long x 25 ft wide = 75,000 ft²

1.5 ft (rip depth) / 27 ft³/CY =
 500 ft/segment

3,333 CY

References for this sheet: Caterpillar Performance Handbook, Edition 33,
 Handbook for Calculation of Reclamation Bond Amounts, US Department of the Interior, Office of Surface Mining,
 4/5/00, Worksheet 7, Productivity and Hours Required for Ripper-Equipped Dozer Use.

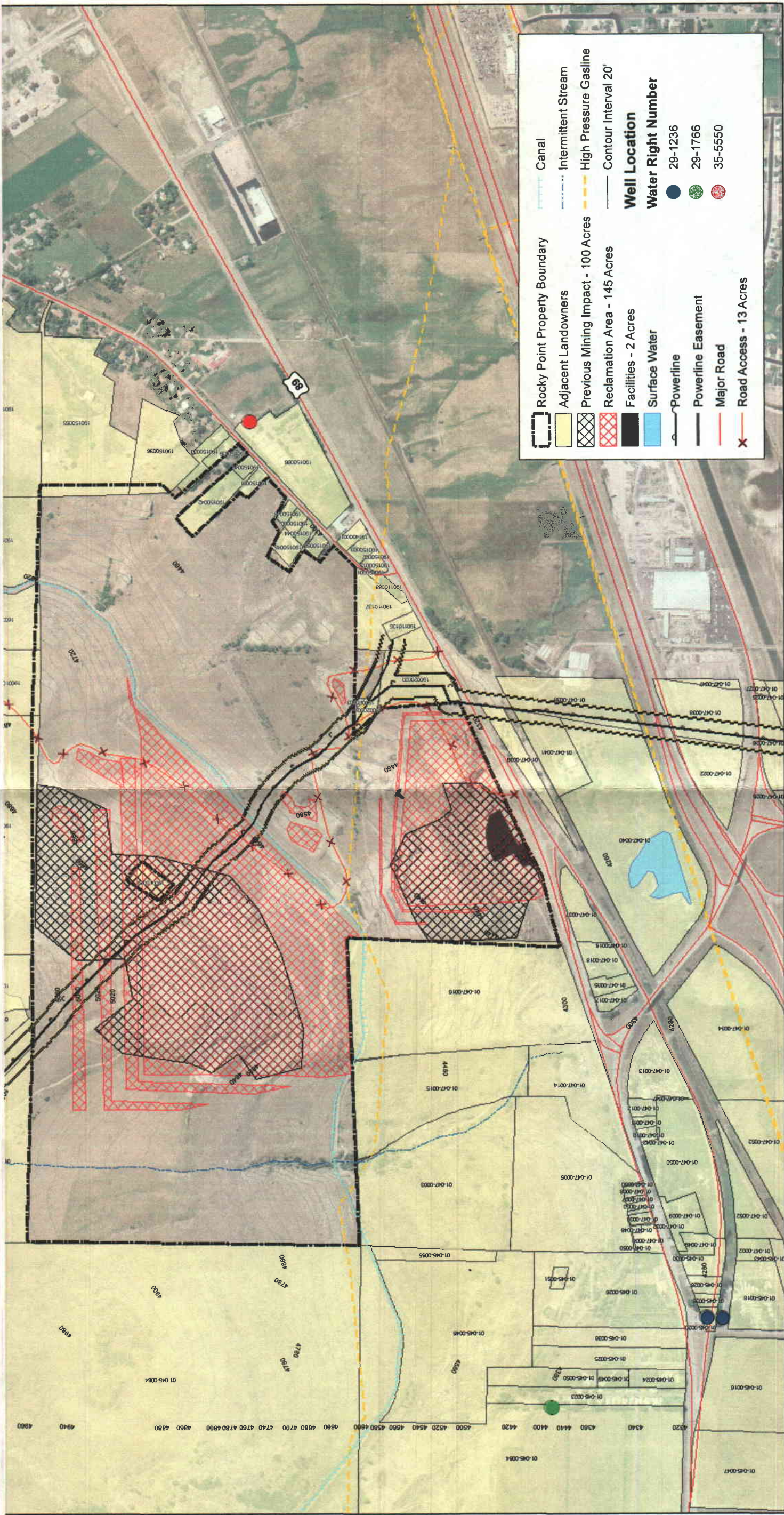
cycle time = 500 ft / 88 ft/min / 0.3 min = 18.9 minutes per pass
 fixed turn time
 Passes/Hour = 60 min/hr / 18.9 min/pass / 0.83 efficiency factor = 3.8 passes / hour
 Volume Cut/Pass = 1.5 ft x 7 ft x 500 ft / 27 ft³/yd³ = 194 BCY / pass
 tool penetration
 Hourly Production = 194 BCY / Pass x 3.8 passes/hr. = 742 BCY / hr
 bank volume to be ripped 3,333 BCY / 742 BCY / hr = 4 hr/segment
 hourly production

Total Hrs. Required: 6 segments x 4 hr/segment = 27 hrs

References

no.

1	RS Means, Heavy Construction Cost Data, 2008, pg 451, 20 01 54 33 4810, Wheel Loader, 7 to 8 CY. \$77.35 hourly oper. cost, \$4,340 weekly rental. Cost per hour = $\$77.35 + \$4,340/5/8 = 185.85$
2	RS Means, Heavy Construction Cost Data, 2008, pg 451, 20 01 54 33 5600, 35 ton off highway rear dump. 53.15 hourly oper. cost, \$3,320 wkly rental. Cost per hour = $\$53.15 + \$3,320/5/8 = \$136.15$
3	RS Means, Heavy Construction Cost Data, 2008, pg 449, 20 01 54 33 1930, 55,000lb grader, self propelled. \$51.10 hourly oper. Cost, \$3,465 wkly rental. Cost per hour = $\$51.10 + \$3465/5/8 = \$137.73$
7	RS Means, Heavy Construcion Cost Data, 2008, pg. 450, 20 01 54 33 4260, Tractor, crawler, with bulldozer, 200 H.P., \$52.85 hourly oper. Cost, \$3,240 weekly rental, Cost per hour = $52.85 + \$3,240/5/8 = 133.85$
4	RS Means, Heavy Construction Cost Data, 2008, pg 18, 01-54-36.50-0100, Equipment Mobilization/Demobilization, above 150 hp., \$355 each one way.
5	RS Means, Heavy Construction Cost Data, 2008, pg 454, 40 01 54 33 6950, Water Truck, off highway, 6,000 gallons, \$63.60 hourly oper. Cost, \$2,290 wkly rental.
6	RS Means, Heavy Construction Cost Data, 2008, pg. 256, 32-01-90.13-0120, Fertilizing, Tractor Towed Spreader, 8', \$3.73 /Thousand ft ²



Rocky Point Property Boundary

Adjacent Landowners

Previous Mining Impact - 100 Acres

Reclamation Area - 145 Acres

Facilities - 2 Acres

Surface Water

Powerline

Powerline Easement

Major Road

Road Access - 13 Acres

Canal

Intermittent Stream

High Pressure Gasline

Contour Interval 20'

Well Location

Water Right Number

29-1236

29-1766

35-5550

WP Natural Resource Consulting, Inc.
PO Box 520604
SLC, UT 84152
(801) 699-5459

Last Updated:
September 23, 2008

Rocky Point
Gravel Pit

1:10,000

0

500

1,000

1,500

2,000

Feet

N

Base Map

Map ID

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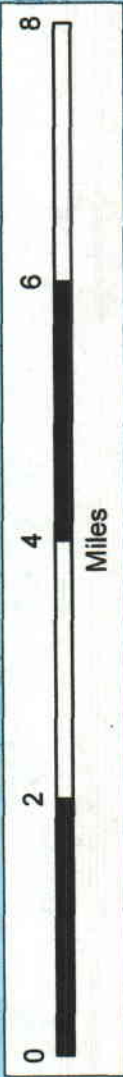
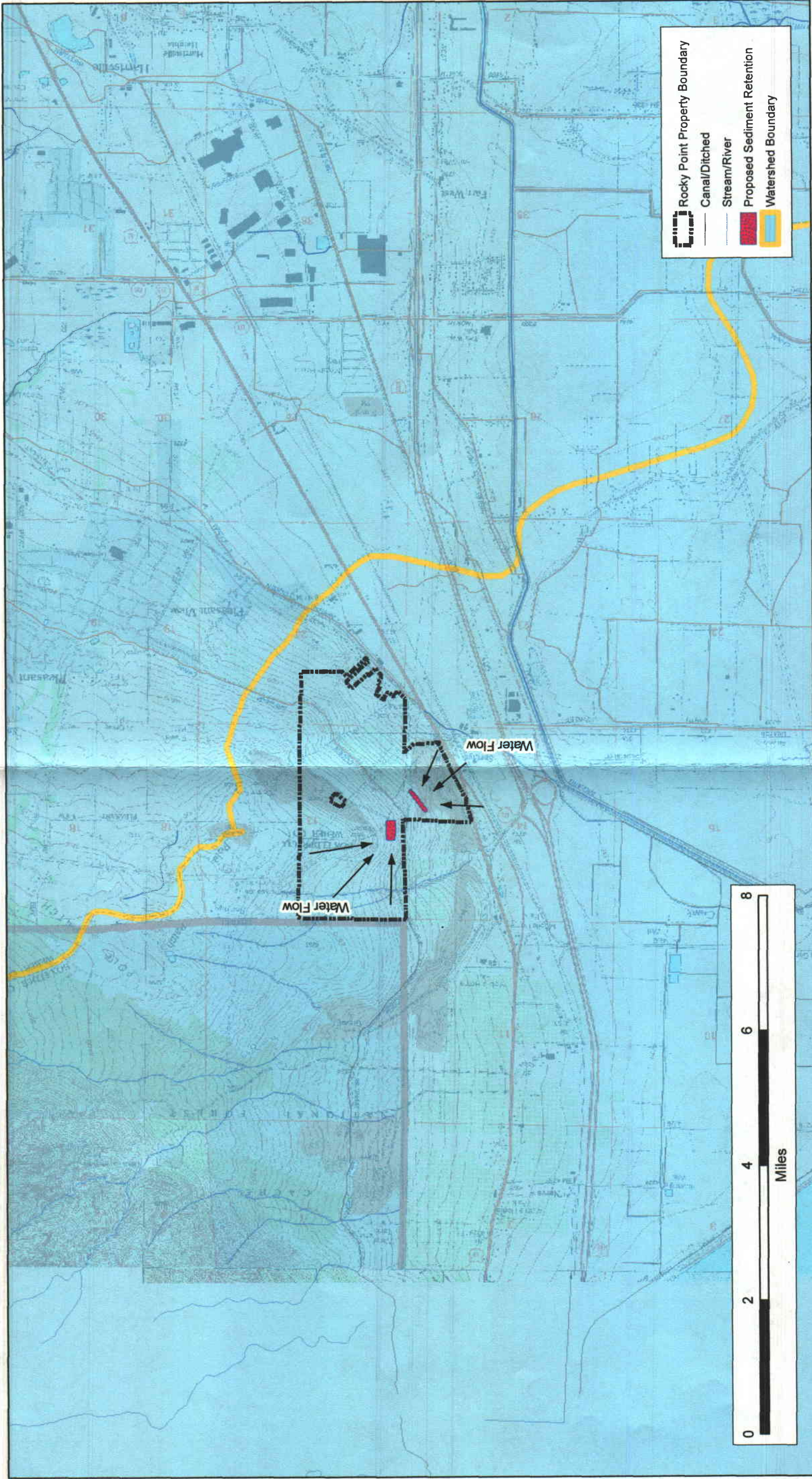
SEP 29 2008

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WP Natural Resource Consulting, Inc. PO Box 520604 SLC, UT 84152 (801) 699-5459	Last Updated: August 25, 2008	Rocky Point Gravel Pit	1:8,000 0 500 1,000 1,500 2,000 Feet N	Surface Facilities Map	Map ID RECEIVED SEP 29 2008 DIV. OF OIL, GAS & MINING

This map is for references purposes only. The map is not designed to be used as an engineered drawing or to establish legal ownership.



- Rocky Point Property Boundary
- Canal/Ditched
- Stream/River
- Proposed Sediment Retention
- Watershed Boundary

WP Natural Resource Consulting, Inc.
PO Box 520604
SLC, UT 84152
(801) 699-5459

Last Updated:
August 27, 2008

**Rocky Point
Gravel Pit**

1:30000

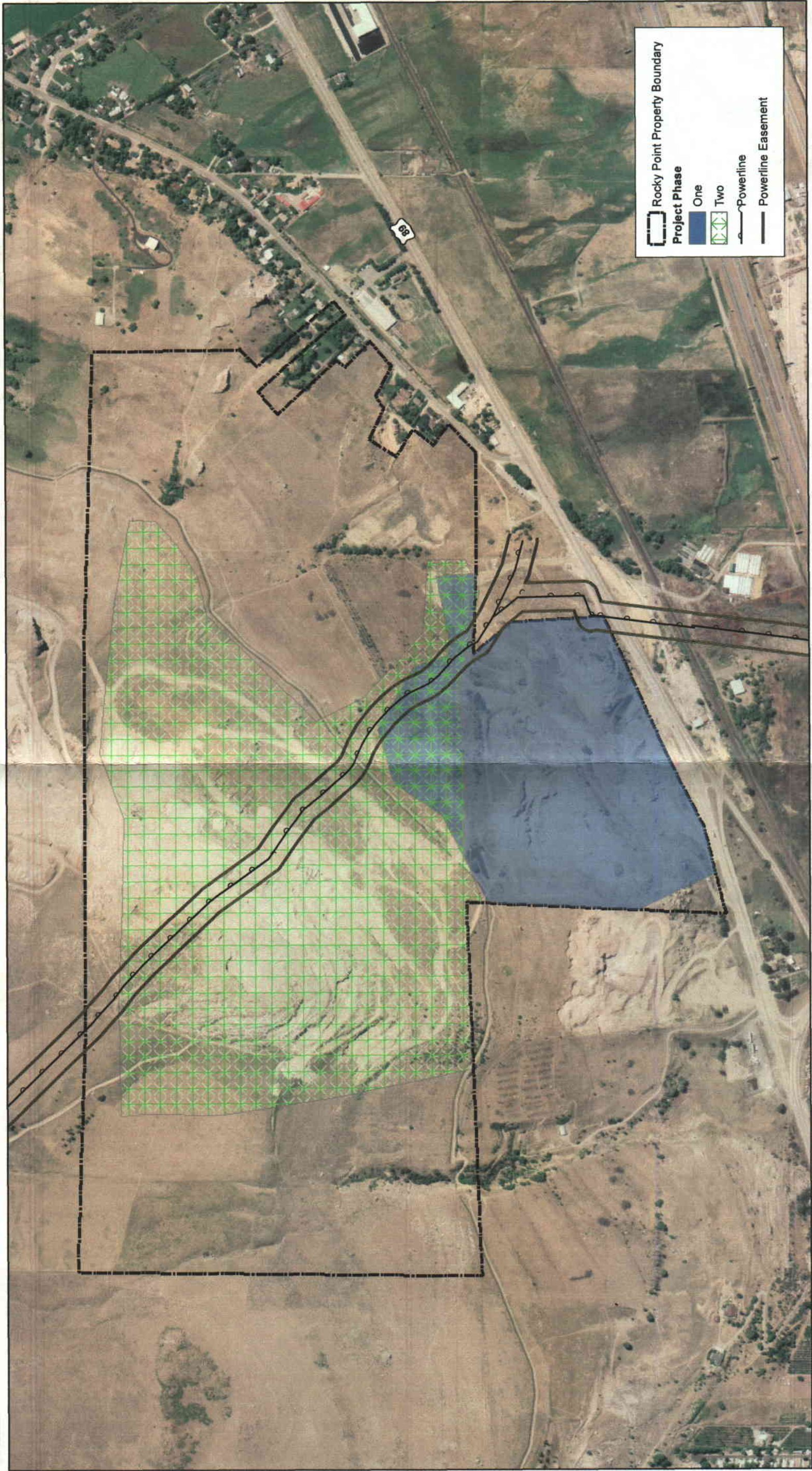


**Watershed Map with
Proposed Sediment
Retention**

Map ID

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SEP 29 2008



Rocky Point Property Boundary

Project Phase

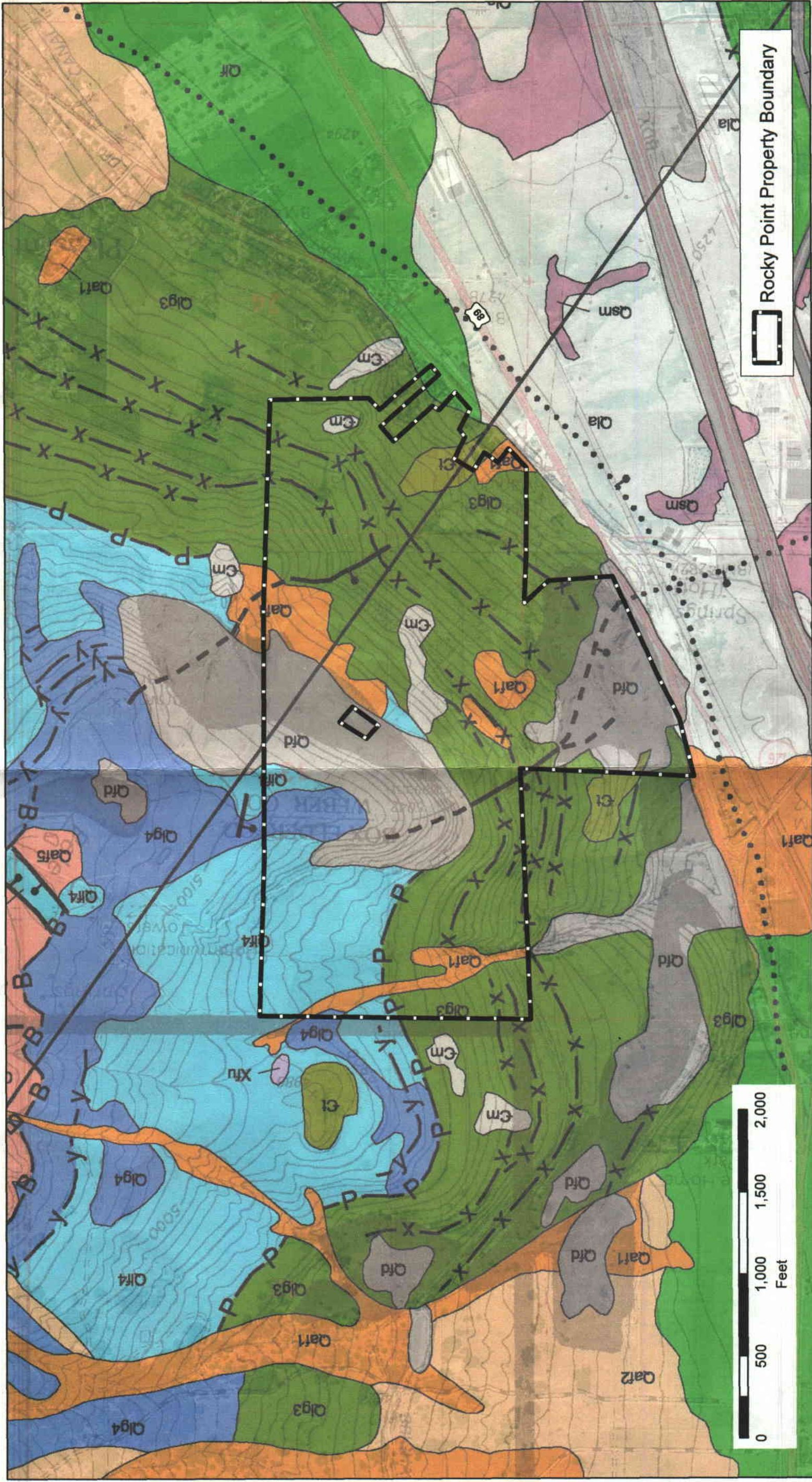
- One
- Two

Powerline

Powerline Easement

WP Natural Resource Consulting, Inc. PO Box 520604 SLC, UT 84152 (801) 699-5459		Last Updated: August 25, 2008		Rocky Point Gravel Pit		<div>1:8,000</div> <div><div></div><div>05001,0001,5002,000</div><div>Feet</div></div> <div><div>N</div></div> <div>Proposed Mining Phases Map</div>	<div>Map ID RECEIVED SEP 29 2008</div> <div>DIV. OF OIL, GAS & MINING</div>
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Last Updated:
May 12, 2007

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**Rocky Point
Gravel Pit**

1:12,000



Geology Map

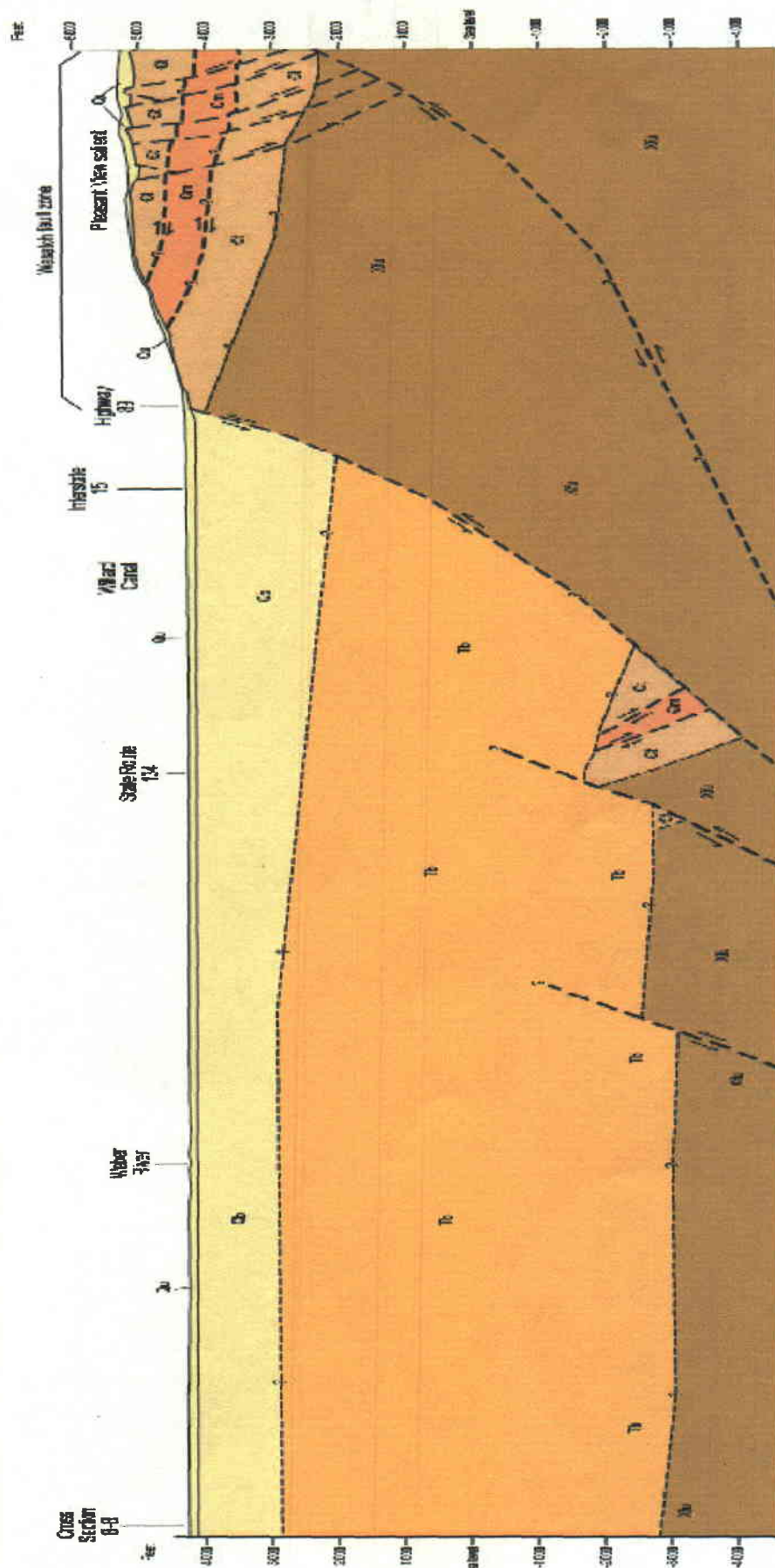
Map ID
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SEP 29 2008

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Geology Cross Section of the Plain City Quadrangle, Southwest to Northeast



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KEY FOR GEOLOGIC MAP

Qlg3 Lacustrine gravel-bearing deposits, Lake Bonneville-regressive-
Clast-supported, moderately to well-sorted, pebble to cobble gravel and
gravelly sand, interlayered with some silt and sand; deposited and reworked
in higher energy environments along the Provo and regressive shorelines
near the mountain front and on the Pleasant View salient; mapped at
elevations below Provo shoreline; thickness typically less than 6 meters (20
ft).

Qaf1 Younger alluvial-fan deposits, Holocene- Mixture of gravel and
sand deposited by streams, and diamicton deposited by debris flows; forms
fans, locally with distinct levees, and channels at mouths of mountain-front
canyons; exposed thickness less than 6 meters (20 ft).

Paleozoic Sedimentary Rocks

Lower to Middle Cambrian

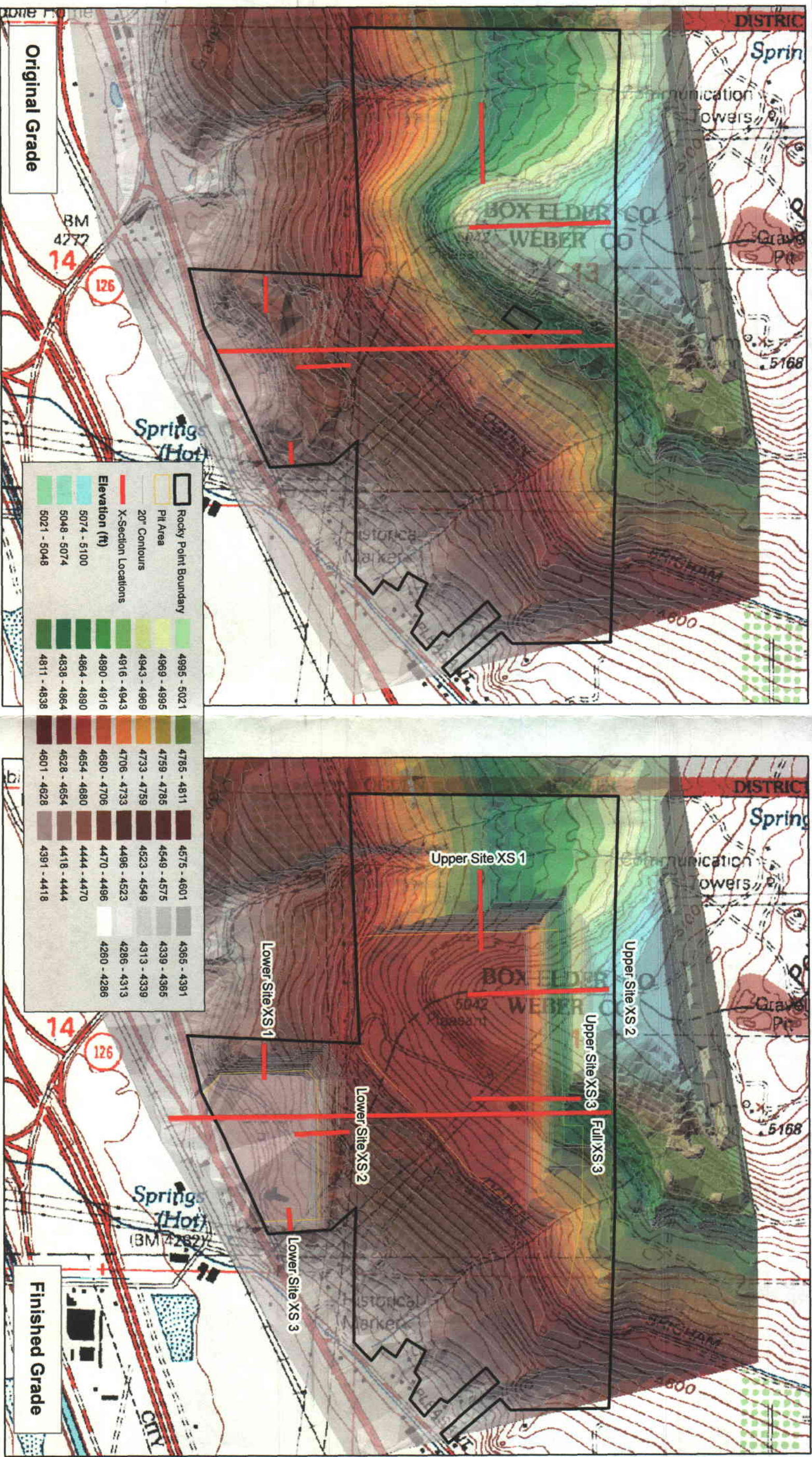
C-m Maxfield Formation, undivided- Small, resistant outcrops of light-
to dark-gray, medium- to thick-bedded, dolomite and minor limestone;
mapped only where not covered by Lake Bonneville deposits on the Pleasant
View salient. Includes Ophir Shale where shown in cross sections; up to 150
m (500 ft) thick.

C-t Tintic Quartzite- Main part of formation consists of cliff-forming,
white to tan, thin- to thick-bedded, quartz-rich, well-cemented sandstone
(orthoquartzite) with some lenses of quartz-pebble conglomerate and thin
layers of argillite; argillite intervals increase in abundance and quartz pebbles
decrease in abundance toward the top of the formation; basal part of the
formation consists of heterogeneous mixture of green to purple to tan
arkosic sandstone, quartz-pebble conglomerate, and micaceous siltstone;
about 400 to 450 meters (1300-1500 ft) thick; mapped only where not
covered by Lake Bonneville deposits on the Pleasant View salient.

Qlf4 Lacustrine fine-grained deposits, Lake Bonneville-transgressive-
Medium sand to silt deposited and reworked in moderate- to low-energy
environments near and below the Bonneville shoreline on the Pleasant View
salient in the northeast part of the quadrangle; also includes calcareous clay,
silt, and fine sand deposited in deeper water environments in the subsurface
within the southern and western parts of the quadrangle; thickness of
deposits near the Bonneville shoreline generally less than 6 meters (20 ft).

Lower Proterozoic Metamorphic and Igneous Rocks

Xfu Farmington Canyon Complex, undivided— Light- to pink-gray, moderately to strongly foliated, hornblende-bearing, granitic gneiss; dark-gray to black, moderately to strongly foliated, hornblende-plagioclase gneiss, with minor garnet, quartz, and biotite; and gray-brown, strongly foliated, schist to gneiss containing variable amounts of muscovite, biotite, quartz, and feldspar, with minor garnet in some layers; in some layers unit also contains widespread, variably deformed pegmatitic dikes and some pods of amphibolite; crops out in the extreme northeast part of the quadrangle. Total structural thickness probably exceeds 6.5 kilometers (4 mi) (Yonkee and Lowe, 2004).



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Last Updated:
August 25, 2008

Created by:

**Rocky Point
Gravel Pit**

1:12,000



**Original and
Final Grade Elevations**

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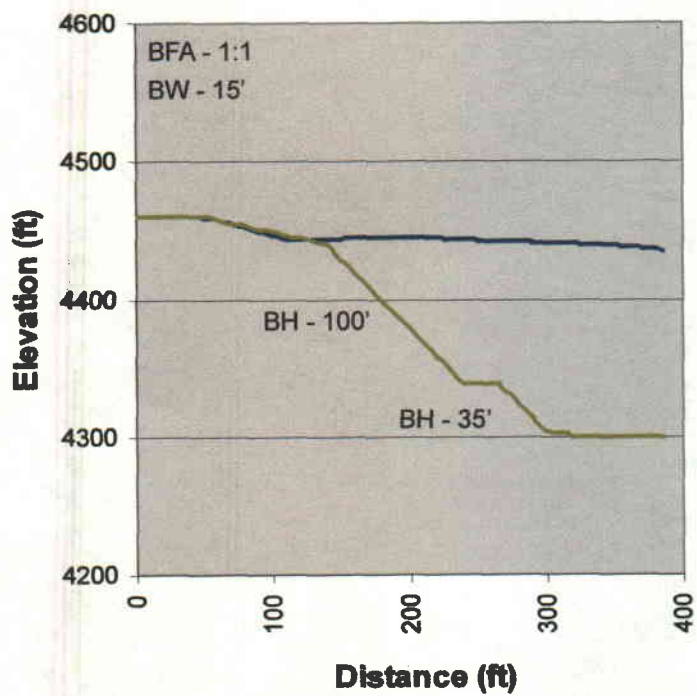
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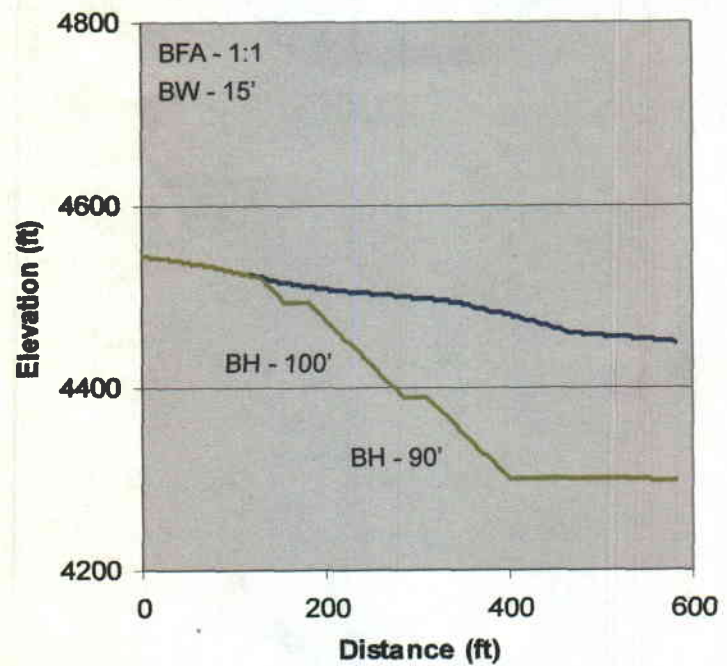
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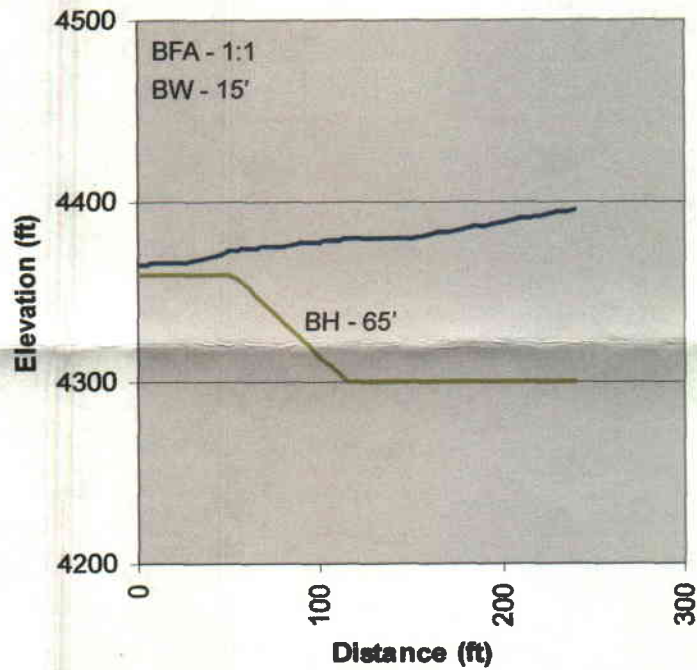
Lower Cross-Section 1



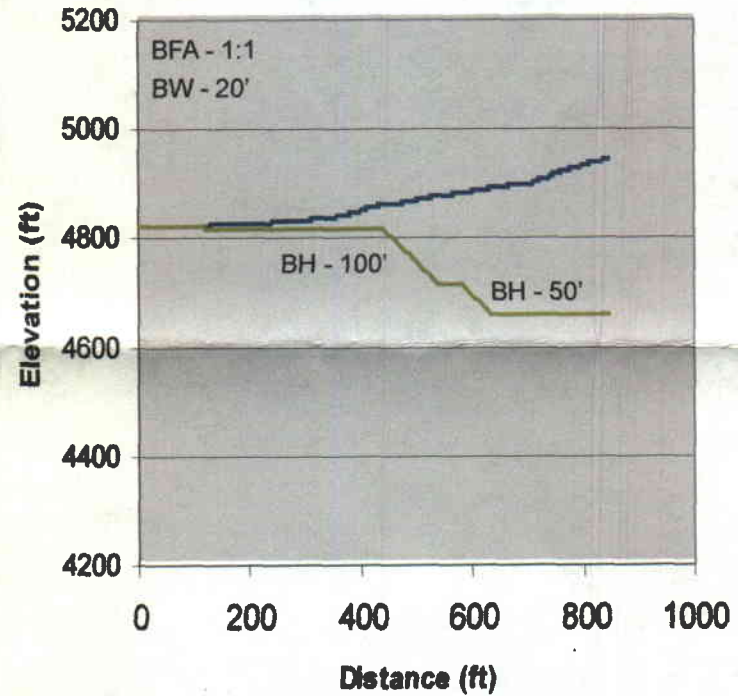
Lower Cross-Section 2



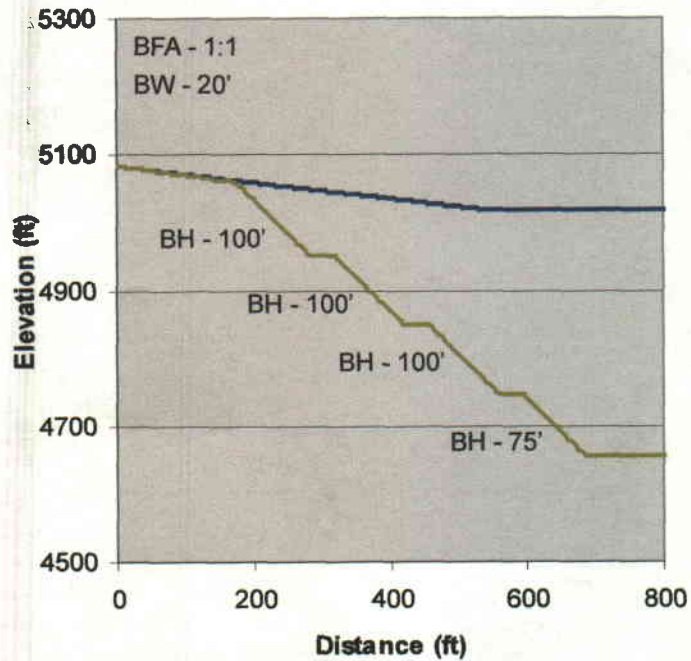
Lower Cross-Section 3



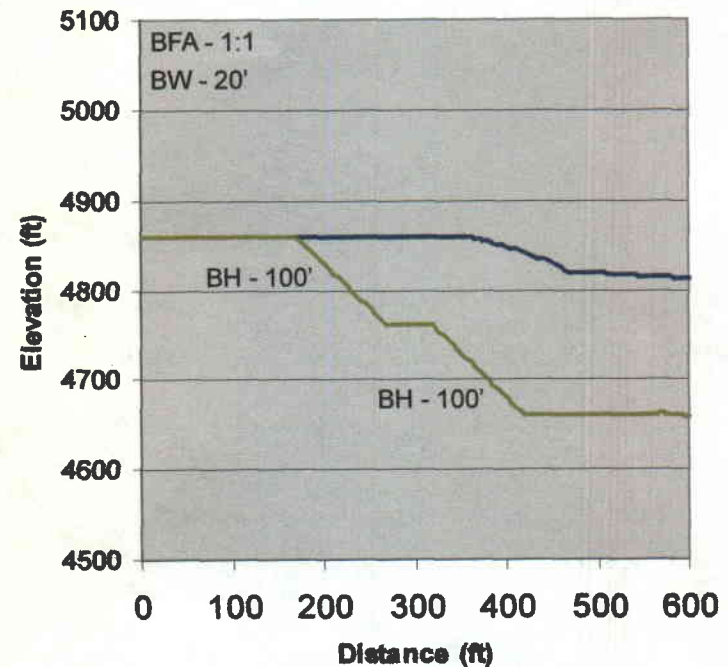
Upper Cross-Section 1



Upper Cross-Section 2

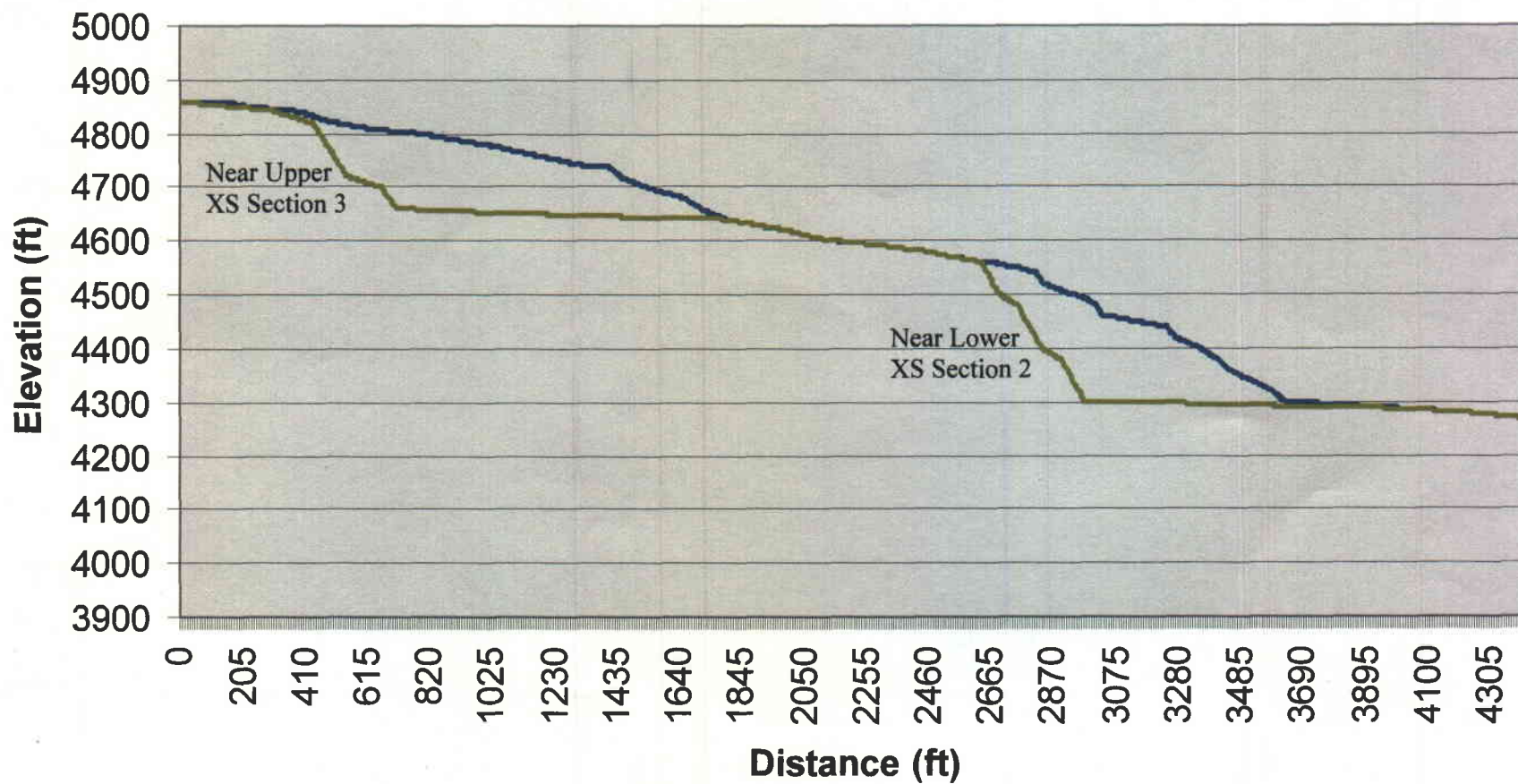


Upper Cross-Section 3

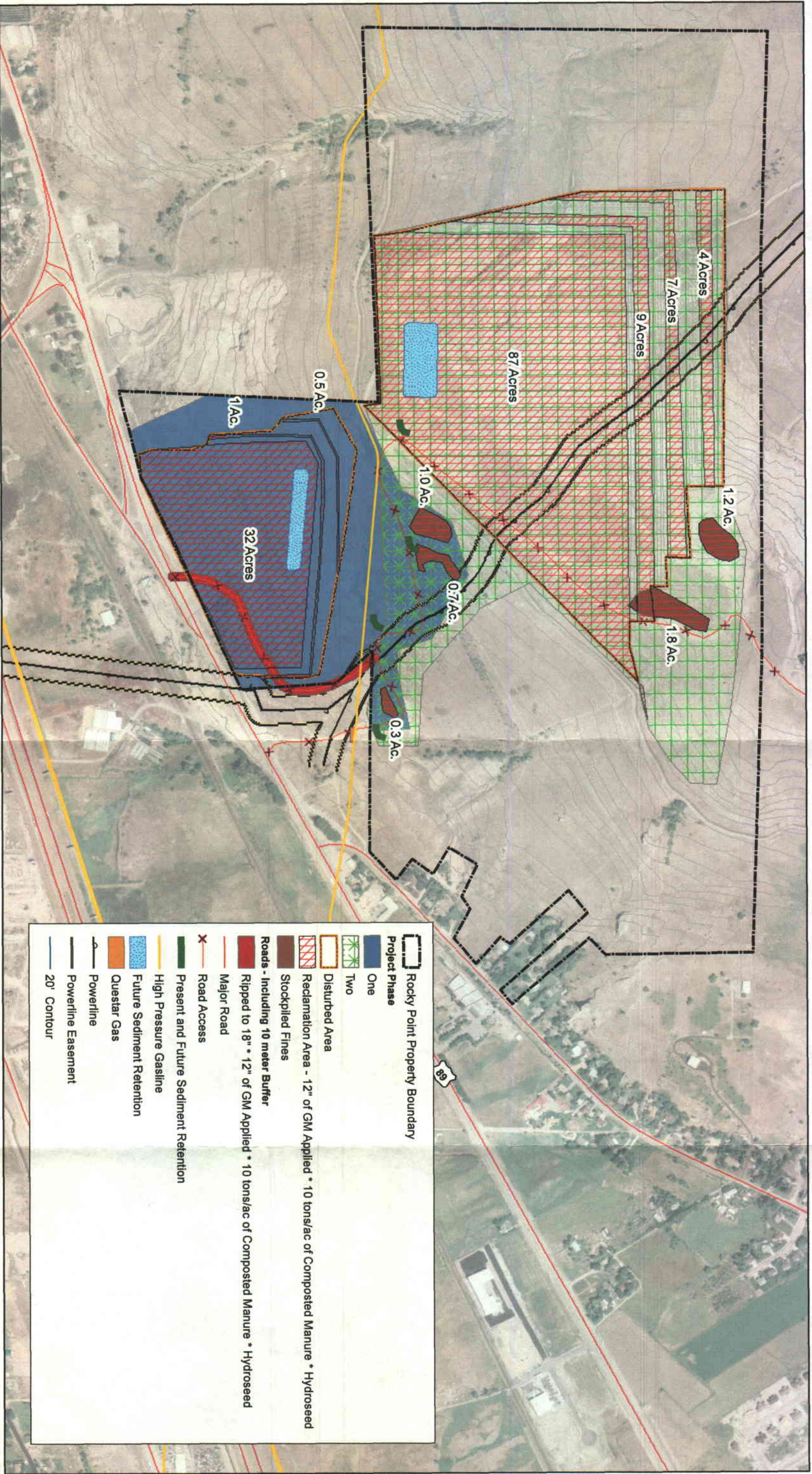


— Original Grade — Final Grade

Full X-Section



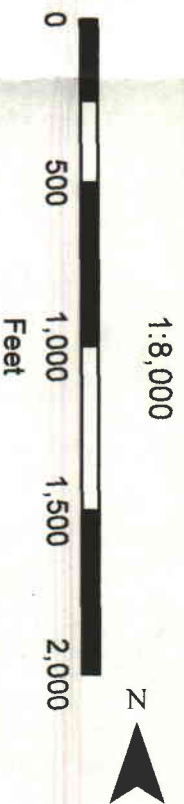
— Original Grade — Final Grade



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**Rocky Point
Gravel Pit**



**Reclamation Treatments
Map**

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